WORKS ISSUED BY

The Hakluyt Society.

THE NATURAL AND MORAL HISTORY OF THE INDIES.

No. LX.

THE

NATURAL & MORAL

HISTORY OF THE INDIES,

BY

FATHER JOSEPH DE ACOSTA.

REPRINTED FROM THE

ENGLISH TRANSLATED EDITION OF EDWARD GRIMSTON, 1604.

AND EDITED,

With Notes and an Introduction,

BY

CLEMENTS R. MARKHAM, C.B., F.R.S.

VOL. I.

THE NATURAL HISTORY

(BOOKS I, II, III, AND IV).

LONDON:
PRINTED FOR THE HAKLUYT SOCIETY.

MDCCCLXXX.

G161
H2
v. 60

T. RICHARDS, 37, GREAT QUEEN STREET, W.C.

COUNCIL

OF

THE HAKLUYT SOCIETY.

Colonel H. YULE, C.B., President.

Admiral C. R. DRINKWATER BETHUNE, C.B.
Major-General Sir HENRY RAWLINSON, K.C.B. } Vice-Presidents.

W. A. TYSSEN AMHERST, Esq., M.P.

Rev. Dr. G. P. BADGER, D.C.L.

J. BARROW, Esq.

WALTER DE GREY BIRCH, Esq.

E. A. BOND, Esq.

E. H. BUNBURY, Esq.

Admiral Sir RICHARD COLLINSON, K.C.B.

The Earl of DUCIE.

AUGUSTUS W. FRANKS, Esq.

Lieut.-General Sir J. HENRY LEFROY, C.B., K.C.M.G.

R. H. MAJOR, Esq.

Colonel Sir WM. L. MEREWETHER, C.B., K.C.S.I.

Admiral Sir ERASMUS OMMANNEY, C.B.

Lord ARTHUR RUSSELL, M.P.

The Lord STANLEY of Alderley.

EDWARD THOMAS, Esq.

Lieut.-General Sir HENRY THUILLIER, C.S.I.

CLEMENTS R. MARKHAM, C.B., Honorary Secretary.

997422

CONTENTS OF THE FIRST VOLUME.

	PAGE
Introduction	i
Dedication to the Infanta Isabella . .	xix
Translator's Dedication to Sir Robert Cecil .	xxiii
Address to the Reader	xxiv
Analytical Table of Contents . . .	xxvii
The Natural History. First Book . .	1
,, ,, Second Book . .	73
Advertisement to the Reader . . .	103
The Natural History. Third Book . .	104
,, ,, Fourth Book . .	183

NOTICE.

The two Volumes are paged throughout, and the Index will be at the end of the Second Volume.

INTRODUCTION.

THE *Natural and Moral History of the Western Indies* by Acosta, which has been selected to form two volumes of the Hakluyt Society's series, is a valuable work for two reasons. It contains an exposition of the ideas of learned men of the sixteenth century on physical geography, and it is one of the leading authorities on the ancient civilisations of Peru and Mexico.

Our chief knowledge of the author is derived from his published works, only a few facts being forthcoming from other sources. His parents lived at the town of Medina del Campo, the city of the plain, about twenty-four miles from Valladolid, in Old Castille,[1] on the left bank of the swampy river Zapardiel,[2] and overlooked by the old castle of La Mota.[3] They had five sons, named Geronimo, Christoval, Joseph, Diego, and Bernardo; and at least two, if not more, of these boys joined the Society of Jesus. Joseph de Acosta was born in the year 1540, and he was devoted to the Society before he had completed his fourteenth year. Bernardo de Acosta entered upon the same career, and

[1] Between Valladolid and Salamanca.

[2] A southern affluent of the Douro.

[3] Where Queen Isabella died in 1504.

probably Christoval[1] also. The Acostas were fellow townsmen of that charming old soldier Bernal Diaz, who told the story of the conquest of Mexico, but they were many years his juniors.

Joseph de Acosta became a Jesuit in 1553, and for the next eighteen years he must have devoted himself to the study of sacred and classical authors, for he was a man of very great learning, when, at the age of thirty-two, he sailed for the New World, in company with several brethren of the same Society.

Acosta left Spain in the year 1570, touched at the Canaries, and made a rapid passage across the Atlantic; which, he tells us, would have been still more rapid if the mariners had made more sail.[2] He landed at Carthagena, and finally at Nombre de Dios, whence he journeyed through eighteen leagues of tropical forest to Panama.[3] Here he enjoyed the beauties of the glorious scenery, the novel sights at every turn, and was interested, at Capira, in the clever antics of troops of monkeys.[4] From Panama the Jesuit, in pursuance of his missionary work, embarked for Peru, looking forward with curiosity, and some dread, to the passage

[1] But this is not the Christoval de Acosta who wrote the well-known book on the medicines and drugs of India. He was a native of Burgos. His work *(Tractado de las drogas y medicinas de las Indias Orientales con sus plantas debuxadas al vivo por Christoval Acosta medico y cirrejano que las vió ocularmente: en el qual se verifica mucho de lo que escrivio el Dr. Garcia de Orta)* was published at Burgos in 1578. It contains plates of the spice-yielding and other plants. Dr. Acosta, called *El Africano,* suffered captivity in Africa, Asia, and China. His work completed what the learned Portuguese, Dr. Orta, began.

[2] Page 56. [3] Page 263. [4] Page 285.

across the equinoctial. For he was steeped in all the lore of the ancient philosophers concerning the unbearable heat of the burning zone. He crossed the line in March, and, to his surprise, it was so cold that he was obliged to go into the sun to get warm, where he laughed at Aristotle and his philosophy.[1]

On his arrival at Lima, he was ordered to cross the Andes, apparently to join the Viceroy in the interior. He took the route, with fourteen or fifteen companions, across the mountainous province of Huarochiri, and by the lofty pass of Pariacaca,[2] where the whole party suffered severely from the effects of the rarified atmosphere.[3] Acosta describes these sufferings, which he tells us were renewed on the three other occasions that he had occasion to cross the cordillera, by Soras and Lucanas,[4] by Collahuas,[5] and by Cavanas.[6] He also mentions an attack of snow-blindness, and the way in which an Indian woman cured him.[7]

Acosta arrived in Peru at an important time. Don Francisco de Toledo, second son of the Count of Oropesa, a man advanced in years and of great administrative experience, had come out as Viceroy two years before, in 1568. He was a stern man, capable of com-

[1] Page 90.

[2] Pariacaca is over 14,000 feet above the level of the sea.

[3] Page 130.

[4] The road through the districts of Soras and Lucanas leads to the coast valley of Nasca.

[5] Collahuas is further north, in the modern department of Ancachs, province of Huari.

[6] Cavanas, in the department of Puno. This was one of the routes from the Collao to Arequipa.

[7] Page 288.

mitting unjust and cruel acts to secure the success of a policy; but, on the other hand, he was conscientiously anxious to settle the government of the country with a view to the well-being of the people, and his energy and industry were marvellous. He was one of the most prolific legislators in history, and his regulations were suited to the wants of the time and were enduring. In 1571 he had committed a great political crime, in order to secure tranquillity, by beheading the unfortunate young Ynca Tupac Amaru. He then devoted five years to a tour through every part of the Viceroyalty of Peru; and to a settlement of the country, in which he was aided by the Licentiate Polo de Ondegardo, the Jesuit Acosta, and the Judge Matienza. His labours were successful, and the Indians themselves acknowledged that the land had not been so well governed since the days of the good Ynca Tupac Yupanqui.[1] Toledo was practically the founder of the University of St. Mark at Lima. This Viceroy saw what were the true sources of wealth of the country he governed. He did not name silver and gold. But he said that "the two things which Peru had that were rich and of great nourishment—the two staples—were maize and llamas," corn and wool.[2]

Our author accompanied the Viceroy to Charcas,[3] and was with him during his unsuccessful expedition against the fierce Chirihuana Indians.[4] The principal seat of the Jesuits was, at that time, in the little town of Juli, near the western shores of Lake Titicaca.

[1] "Desde el buen Tupac Yupanqui no habia estado la tierra tan bien gobernada." [2] Page 256. [3] Page 155. [4] Page 151.

Here a college was formed, the languages of the natives were studied, and eventually a printing-press was established. Acosta probably resided much at Juli during his stay in Peru. It was here, in all likelihood, that he observed the famous comet of 1577, from 1st November to 8th December, which extended like a fiery plume from the horizon nearly to the zenith.[1] Here, too, he devoted much of his time to the preparation of several learned works, which he took home with him in manuscript, including the first two books of the *Natural History of the Indies*.[2] The particulars respecting the religion and festivals of the Peruvians, in the work of Acosta, are chiefly derived from the Licentiate Polo de Ondegardo.[3] Several of Acosta's brethren at Juli have been made known to us through their works. Among these were Blas Valera, whose valuable writings have been partially preserved by the Ynca Garcilasso; Dr. Francisco de Avila, who wrote on the folk-lore of Huarochiri; Pablo José de Arriaga, the extirpator of idolatry in the Peruvian coast valleys; the half-caste, Diego de Alcobaça, who wrote religious confessionaries in the native languages; and the learned Dr. Gonzalo Holguin, who composed a valuable Quichua grammar. A few years later, the college at Juli was the residence of Ludovico Bertonio, who compiled a copious Aymara dictionary; and it was at Juli that this dictionary was printed in 1611, as well as a Life of Christ in the same language. At Juli, Father Acosta received information respecting the river Amazon from a brother who had formerly been in the famous piratical cruise of Aguirre.[4]

[1] Page 122. [2] Page 103. [3] Page 391. [4] Page 82.

Towards the close of the viceroyalty of Toledo, Father Acosta appears to have moved from the interior of Peru to Lima. Here he mentions having been engaged in superintending the casting of a great bell, and that there was difficulty in getting fuel for the furnace, which made it necessary to fell some great trees in the valley of the Rimac.[1] He mentions also that he saw camels in Peru,[2] which had been brought from the Canaries; and that the Viceroy Toledo sent home seeds of the beautiful white *datura*, which grows round Lima, as worthy of a place in the royal gardens.[3] In 1579 Sir Francis Drake was on the coast, and the Viceroy dispatched a fleet under Don Pedro Sarmiento, partly to chase the English pirate, and partly to explore and survey the Straits of Magellan. Acosta had conversations with the pilot of Sarmiento's fleet, and was allowed to inspect his chart, thus obtaining much hydrographical information, and particulars respecting the tides in the straits. He also conversed with the new Viceroy Henriquez on the same subject.[4]

Don Francisco de Toledo returned to Spain in 1579, and was succeeded by Don Martin Henriquez, a younger son of the Marquis of Alcanises, who had previously been Viceroy of Mexico. Don Martin made his entry into Lima on May 4th, 1581. Three weeks afterwards the new Archbishop, Dr. Toribio Mogrovejo, was installed, and commenced his saintly and active career; which acquired for him so great a name for purity and holiness that he was eventually

[1] Page 308. [2] Page 272. [3] Page 255.
[4] Pages 133, 140, 143, 145.

canonised as St. Toribio. In 1582 a Provincial Council was called to meet at Lima, consisting of the Archbishop and the Bishops of Cuzco, Imperial, Santiago de Chile, Paraguay, Quito, Charcas, and Tucuman.

Don Martin Henriquez opened the third Council of Lima in person. He also founded the College of St. Martin, to be managed by the Jesuits, and was active in promoting useful measures; but his career as Viceroy of Peru was cut short by death on March 12th, 1583. The Council proceeded with its sittings, and got through a vast amount of work. Full instructions were drawn up for the guidance of parish priests, and catechisms were prepared for the instruction of the Indians. It may be observed that the proceedings of these Lima Councils throw much light on the religion and folk-lore of the people. For they enter into many minute details respecting the customs and superstitions which the priests were to suppress, and have thus preserved an invaluable record of the beliefs of the ancient Peruvians. Father Acosta was very busily employed during the sessions of the third Council of Lima, and he was its historian.

The last sitting took place on October 18th, 1583, on which important occasion the Jesuit Father Joseph de Acosta delivered an eloquent and learned oration.[1] The proceedings were forwarded to Spain, and received the royal assent on September 18th, 1591, having previously been confirmed by the Pope. The Papal approval was announced by Cardinal Caraffa, in 1588,

[1] "*Una elegante y docta oracion.*"—*Montalvo*, page 214.

to the Archbishop of Lima.[1] Shortly after the close of the last session of the Council, Acosta embarked, with all his valuable manuscripts, representing the literary labours of about fifteen years, and commenced his voyage to Mexico. He shows himself, in his remarks during the passage, to be a shrewd observer of nature, and an eager seeker after knowledge.[2] During this, or the subsequent voyage home, he learnt from an expert Portuguese pilot that there were four points of no variation on the earth, and that one of them was the island of Corvo in the Azores.[3] Acosta landed, after a long voyage, at the port of Guatulco,[4] at the western end of the Gulf of Tehuantepec, in the Oaxaca province, whence he journeyed by land to Mexico, where he resided in 1586.[5] In this country he had opportuni-

[1] There are two lives of Archbishop Toribio Mogrovejo. One is by the learned Don Antonio Leon-Pinelo, entitled *Vida del Ilustrissimo Reverendissimo D. Toribio Alfonso Mogrovejo, Arcobispo de la ciudad de los Reyes* (1653). The other is by Dr. Juan Francisco A. de Montalvo, and has a quaint title-page—*El Sol del Nuevo Mundo ideado y compuesto en las esclarecidas operaciones del Bienaventurado Toribio Arcosbispo de Lima* (Rome, 1683). Leon Pinelo gives very full particulars of the Archbishop's family and ancestry. The work of Montalvo is valuable because it contains notices of the lives of many Peruvian authors.

[2] Page 127. [3] Page 52.

[4] Page 400. Sir Francis Drake, during his famous voyage of circumnavigation, arrived at Guatulco on April 15th, 1579. Here he got provisions, and also "a certaine pot full of rials of plate which we found in the towne, together with a chain of gold, and some other jewels, which we intreated a gentleman Spaniard to leave behind him, as he was flying out of towne." (*Drake's Worlde Encompassed*, p. 113.) Here Drake landed a Portugal pilot whom he had captured out of a vessel at the Cape Verde Islands. This man is mentioned by Acosta; see page 140. [5] Page 454.

ties, of which he diligently availed himself, for collecting information touching the natural products, and the civilisation and ancient religion of the Aztecs. His chief informant, respecting the rites and festivals of the Mexicans, was a brother of the Company of Jesus named Juan de Tobar, who was then a Prebend in the church at Mexico.[1] He also enjoyed the pleasure of seeing his brother Bernardo once more, a Jesuit who died at Mexico on May 29th, 1613.

Acosta went home to Spain in the fleet of 1587, which had a most precious cargo. It contained twelve chests of gold,[2] each weighing 100 lbs.; 11,000,000 pieces of silver;[3] two chests of emeralds,[4] each weighing 100 lbs.; 22,053 cwts. of ginger,[5] 50 of sarsaparilla, 48 of *cassia fistula*, 350 of *lignum sanctum*, 1309 of Brazil wood,[6] and 99,794 hides from St. Domingo.[7] When they unloaded at Seville, he says that it was a wonderful thing to behold the river and the arsenal, with such piles of hides and merchandise.[8]

The first object of Acosta, after his return to Europe, appears to have been to make arrangements for the publication of his manuscripts. In February 1588 he was in Madrid, at which place he wrote the dedication to Philip II of the two books on the *Natural History of the Indies*, and of his work on the *Conversion of the Indians*, which were published in Latin at Salamanca in 1588 and 1589. He then went to Rome, where his theological works saw the light. His *De Christo*

[1] Page 391. [2] Page 194. [3] Page 204.
[4] Page 226. [5] Page 239. [6] Page 260.
[7] Page 271. [8] Page 271.

revelato appeared in 1588, and his *De temporibus novissimis* in the same year. His *Concilium Limense* appeared shortly afterwards, and his *Concionum* in 1596. His complete work on the *Natural and Moral History of the Indies* was published at Seville in 1590.

Acosta was head of the Jesuits' College at Valladolid, and Visitor in Aragon and Andalusia. Finally, he was appointed to the charge of the College at Salamanca, where he died[1] on the 15th of February 1600, in his sixtieth year.

The theological works of Acosta give evidence of great learning. The *De Christo in scripturis revelato* consists of nine books, dedicated to Cardinal Caraffa. They are intended to prove that Christ is the centre of all scriptures, the Saviour whose coming was announced by the Baptist, and that heretics twist the words of revelation to their own purposes.[2] This work was published at Rome in 1588, and again in 1590, in quarto. Other editions appeared at Paris in 1592, at Salamanca, at Venice; and, finally, at Paris in 1841.[3] The

[1] But not in the grand college of the Jesuits (*La Clericia*) which may now be seen at Salamanca. It was not built until 1614. In the time of Acosta the Jesuits occupied another building, now the cemetery; and it was here that Acosta died. See *Madoz*.

[2] Lib. I. Universum scripturæ scopum esse Christum. II. Falli Hæreticos que scripturæ sensem facilem jactant. III. Recte divinam scripturam tractari cum ad Dei dilectionem dirigetur. IV. Jesus verus. V. Jesus salvator. VI. Jesus Mater Maria supra omnes Deo grata et nostræ salutis administra electa divinitas. VII. Jesum Joannes Baptista Præcursor annuntiat. VIII. IX.

[3] In the *Scripturæ Sacræ cursus completus ex commentariis omnium perfectissimis ubique habitis, et a magna parte episcoporum*

De temporibus novissimis is usually bound up with the *De Christo revelato*. It consists of four books on the prophecies, and on the latter days, with speculations on the coming of the day of the Lord.[1] The *Concionum*, in three volumes, was published at Salamanca in 1596, at Venice in 1599 (4to.), and at Cologne in 1600 (8vo.). The *Concilium Limense*, a record of the proceedings of the Council of Lima in 1583, was composed in three books, in Latin.

The results of Acosta's South American researches first saw the light at Salamanca in 1588 and 1589, the two works being usually bound up together. *De natura novi orbis, libri duo, et de promulgatione Evangelii apud barbaros, sive de procuranda Indorum salute, libri sex.* The *De natura* is the first two books of the Natural History in Latin. These books were written in Peru. A second edition was published at Salamanca in 1595, and again at Cologne in 1596. The *De promulgatione* is an interesting essay on the conversion of the Indians. Acosta here maintains that the salvation of the people of Peru must not be despaired of, on account of the difficulties which surround the missionaries. He urges the importance of study-

necnon theologorum Europæ Catholicæ universim ad hoc interrogatorum designatis unicé confletus. Tom. ii (Paris, 1841); 398 pages, beginning at page 698. It is preceded by a short life of Acosta, and is furnished with a good index.

[1] Lib. I. Sacris literis trade, Diem Judicii propinquare. II. De magna tribulatione sub Antichristo futura deinceps dicendum. III. Ecclesiam non esse Antichristi quamvis valida persecutione superandam. IV. An Dies Domini repentinus an potius vehementer formidatus veniat.

ing the native languages, and gives advice on the various details of a well organised parochial system.

Acosta then translated the two books of the *De natura* from Latin into Spanish, and added five others, which completed the *Historia natural y moral de las Indias*. The first four books are devoted to the natural history, the last three to the moral history, of the Indies. In the former, the learned Jesuit touches upon all points of interest relating to physical geography as it was then understood, comparing the knowledge of his time with the opinions and beliefs of ancient philosophers and Fathers of the Church. In this spirit he discusses the form of the earth and of the heavens, the distribution of land and sea, the habitability of the tropics, and the way in which America may have been peopled. In the first two books the discussion is more general, while the next two treat especially of the New World and its productions. Chapters are devoted to the winds and tides, and to the fisheries, others to the lakes and rivers, to the varied aspects of the lands, to volcanoes and earthquakes, to the mineral resources, and to the vegetable and animal kingdoms. The last three books, including the "Moral History of the Indies", give an interesting account of the religion and government of the people of Peru and Mexico, and form a valuable body of information respecting those ancient American civilisations. Acosta was a man of great learning; he was an intelligent and indefatigable observer, as well as a very diligent collector of information, and he had exceptionally good opportunities; so that his work will

always rank high as an authority on the subjects of which it treats.

The *Historia Natural*, in its complete form, was first published at Seville in 1590 (4to.), next at Barcelona in 1591 (8vo.). The Madrid editions appeared in 1608[1] and 1610. An Italian translation, by Giovanni Paolo Gallucio, appeared in 1596[2] at Venice.

The work of Acosta was translated into Dutch by the great traveller J. Huyghen van Linschoten, and published at Enckhuysen in 1598 (8vo.), and at Amsterdam in 1624 (4to.).[3] The French translation was by R. Regnauld, and two editions appeared at Paris in 1597 and 1600.[4] De Bry published the work in Latin at Frankfort in 1602 (fol.) and 1603, and a German edition in 1601 (fol.): being Part IX of his America.[5] A compilation from it was published by De Bry at Frankfort, in Latin in 1624, and in German in 1623;[6]

[1] It is with the Madrid edition of 1608 that the translation, now reprinted, has been collated.

[2] *Historia naturale e morale delle Indie, novamente tradotta delle lingua Spagnuola nella Italiana de G. P. Galucci.* (Venetia, 1596, 4to.)

[3] *Historie naturael ende morael van de Westersche Indien nu eerstmeal uyt den Spaenschen overgheset door J. Huyghen van Linschoten.* (Enckhuysen, 1598, 8vo.)

[4] *Histoire naturelle et morale des Indes . . . traduite par R. Regnauld.* (Paris, 1597, 8vo.)

[5] *Theodor de Bry. Americæ novæ pars . . . de novis orbis naturæ. Acosta.* America, Pars IX. (Francoforti, 1602, fol.)

Von gelegenheit der Elemente natur—de Newer Welt J. H. van Linschoten. De Bry. (1601, fol.)

[6] *Paralipomena Americæ, hoc est discursus accurataque Americæ descriptio.* T. de Bry. America, Pars XII. (Frankfort, fol., 1624.)

and it also appeared in Dutch, in the collection of P. van der Aa, in 1727.[1]

The English translation of Acosta, which is reprinted in the present volume, was first published in London in 1604. On the title-page only the initials of the translator are given—"E. G." But it has been ascertained that this was Edward Grimston, a writer and translator of note, during the reigns of Elizabeth and James I. Edward Grimston belonged to an Essex family, which sprung originally from the Grimstons of Grimston Garth, in Yorkshire. Edward served in the wars, was made prisoner at Calais in 1558, and afterwards escaped from the Bastille. Besides translating Acosta, he wrote a history of France, and a general history of the Netherlands. The latter work, published in London in 1609, is a translation of the *History of Jean François le Petit* (Dordrecht, 1601), with additions from the manuscripts of Sir Roger Williams, and brought down to 1608. Edward Grimston, who is said to have lived to the age of ninety-eight, was the grandfather of Sir Harbottle Grimston of Bradfield, a well-known politician during the civil wars, and ancestor of the present Earl of Verulam.

Grimston's translation of Acosta is, on the whole, creditable and trustworthy. There are some omissions, and occasional blunders, especially as regards proper

[1] *Ontdekking van West Indien vlijtig ondersogt, aangeteekend door J. D'A. op sign Reys Togl derwaarts gedaan. Anno* 1592 *en vervolgens . . . uyt het Spaans vertaald.*

In *P. van der Aa. De Aanmerkens waardigste Zee en Landreizen der Portugeezen, etc. Deel* 8. (1727, fol.)

names and native words, which have been carefully corrected in the present edition.

The *Natural History* of Acosta has been much used by subsequent writers on Peru and Mexico. It is quoted twenty-seven times in the *Royal Commentaries of the Ynca Garcilasso de la Vega*, and sometimes these quotations consist of long passages. I have given a list of them in the index to my translation of the first part of the *Royal Commentaries*.[1] A full notice of Acosta and his works is given by Antonio.[2]

Purchas, in his *Pilgrimage*, quotes largely from Acosta, in his account of the Mexican superstitions and sacrifices, and of Peruvian religious ceremonies and government.[3] An abstract of the *Natural and*

[1] II, page 547.

[2] "Josephus de Acosta. Medinensis, postquam in sodalitio Societatis, cui se puerum Salmanticæ tradidit, omni disciplinarum genere, indefessi vir laboris, ingenium prestans atque acre judicium instruxisset, in occidentalem Indiam delatus, provinciam ibi Peruanam sodalium rexit præpositus, septemdecimque totos annos commoratus est, ea curiose observans et in commentaria digerens, quæ hodie magno cum fructu atque operæ pretio de rebus Indias ab eo extant. Inde reversus visitatorem egit in provinciis Aragoniæ ac Bœticæ, necnon et aliquando procuravit Romæ promovitque salutis Indorum spiritualem causam; quod postremum ab eo impensum officium Bibliothecæ Societatis scriptorem fugit. Sexagenarius tandem e vita migravit munus gerens rectoris in Salmantino collegio, pluribus scriptis clarus, superstesque anno 1599." Then follows a list of his works: *Bibliotheca Hispana Nova sive Hispanorum Scriptorum qui ab anno* M.D.—*ad* M.D.C.LXXXIV *floruere notitia: auctore D. Nicolao Antonio Hispalensi, J. C.* (Madrid, 1783, fol., i, page 800.)

[3] Purchas, *Pilgrimage* (1623), lib. v, page 869; and lib. vi, page 931.

Moral History is given in Harris's voyages,[1] and in other similar collections, and the work is much relied upon as an authority by Robertson, and by Prescott in his histories of the conquests of Peru and Mexico. Mr. Prescott quotes Acosta nineteen times in his *Conquest of Peru*, and nine times in his *Conquest of Mexico*. Adopting Mr. Prescott's *Peru* as a test, Acosta takes the fourth place as an authority. Garcilasso de la Vega is quoted eighty-nine, Cieza de Leon forty-five, Polo de Ondegardo forty-one, and Acosta nineteen times. Then follow Pedro Pizarro, Montesinos, Zarate, Herrera, and Gomara.

[1] Harris's *Voyages*, vol. I, lib. v, cap. xiii, pages 751 to 799.

[*Translation of the Spanish Title page of the 3rd Edition.*

THE

NATURAL AND MORAL

History of the Indies.

In which are discussed the notable things of the heavens, the elements, metals, plants, animals; and the rites, ceremonies, laws, government, and wars of the Indians.

COMPOSED BY THE

FATHER JOSEPH DE ACOSTA

(A Priest of the Company of Jesus).

DEDICATED TO THE

MOST SERENE INFANTA DOÑA ISABELA CLARA EUGENIA DE AUSTRIA.

In the Year

1608.

With Licence.

Printed in Madrid, in the house of Alonso Martin. At the charges of Juan Berrillo, seller of books.

To the Most Serene Infanta Doña Ysabela Clara Eugenia de Austria.[1]

Lady,—The King's Majesty, our Lord, having given me permission to offer to your Highness this small work, entitled *The Natural and Moral History of the Indies*, it should not be attributed to me as want of consideration, to desire to occupy the time which is so fully spent by your Highness in matters of importance, by diverting it to subjects which, in treating of philosophy, are somewhat obscure, and, as describing barbarous races, may seem out of place. But as a knowledge of, and speculations concerning the works of nature, especially if they are remarkable and rare, causes a feeling of pleasure and delight in refined understandings, and as an acquaintance with strange customs and deeds also pleases from its novelty, I hold that this work may serve as an honest and useful entertainment to your Highness. It will give occasion to consider the works which have been designed by the Most High in the machinery of this world, especially in those parts which we call the Indies, which, being our territory, give us more to consider, and being the abode of new vassals, whom the Most High God has given to the crown of Spain, a knowledge of it is not altogether strange to us. My desire is that, during some spare moments, your Highness should amuse yourself with the reading. With this object it is

[1] Daughter of Philip II, by Elizabeth of Valois, and afterwards wife of the Archduke Albert, and sovereign of the Spanish Netherlands. She was married in 1595, went to Brussels in the following year, and died in 1633, without children.

written in the vulgar tongue, though, if I do not deceive myself, it is not for vulgar understandings. It may be that, as in other things so in this, your Highness showing a liking for it, this little work may be favored so that the King our Lord may choose to pass a short time in the consideration of affairs and of people so nearly touching his royal crown. I dedicated another book to his Majesty, which I composed in Latin, touching the preaching of the evangel to those Indians. I desire that all I have written may serve, so that the relation of what God, our Lord, deposited of his treasures in those kingdoms, may cause the people of them to receive more aid and favor from those to whose charge His high and divine providence has entrusted them.

I entreat your Highness that if some parts of this little work are not agreeable, you will not desist from passing your eyes over the rest, since it may be that other parts may please, and, if so, they cannot fail to be highly profitable; for this favor will be beneficial to people and countries sorely needing such favor. God, our Lord, preserve and prosper your Highness for many years, as is the daily and earnest supplication of your servants to the Divine Majesty. Amen. In Seville, the 1st of March, in the year 1590.

JOSEPH DE ACOSTA.

THE
NATVRALL
and Morall Historie of the *East and West* Indies.

Intreating of the remarkeable things of Heaven, of the Elements, Mettalls, Plants, and Beasts which are proper to that Country: Together with the Manners, Ceremonies, Lawes, Governements, and Warres of the Indians.

Written in Spanish by Ioseph Acosta, *and translated into English by* E. G.

LONDON

Printed by *Val. Sims* for *Edward Blount* and *William Aspley*. 1604.

To the Right Honorable Sir Robert Cicill, Knight,
Baron of Essingden, Vicount Cranborne, principall
Secretary to his Maiestie, master of the Court of Wardes
and Liveries, and one of his Highnesse most
honourable Privie Counsell.

Right Honorable,—If it appeare presumption in me to shew my love, my dutie betraies me to it. The advantage I have gleaned from idle houres, in exchanging this Indian History from Spanish to English, is commended to your Honors Patronage, whose first father Ioseph Acosta, hath with great observation made worthie the over-looking. A greater motive then that you are your selfe, needed not to excite me to this dedication. I beseech you, my good Lord, take it into shelter, and receive that which is not, for that which I would it were. Let my insufficiencie be measured by my good will. So shall my poore abilities thrive vnder your incouragement, and happily leade me on to some stronger vndertaking, wherein I shall bee bound to thanke you for mine owne paines, and for ever remaine

Your Lordships most devoted,

E. G.

The Authors advertisement to the Reader.

MANY have written sundry bookes and discourses of the New World at the West Indies, wherein they describe new and strange things discovered in those partes, with the actes and adventures of the Spaniards, which have conquered and peopled those Countries. But hitherto I have not seene any other Author which treates of the causes and reasons of these novelties and wonders of nature, or that hath made any search thereof. Neither have I read any booke which maketh mention of the histories of the antient Indians and naturall inhabitants of the New World. In truth, these two things are difficult. The first being the works of Nature, contrarie to the antient and received Philosophy, as to shew that the region which they call the burning Zone is very moist, and in many places very temperate, and that it raines there, whenas the Sunne is neerest, with such like things. For such as have written of the West Indies have not made profession of so deepe Philosophie; yea, the greatest part of those Writers have had no knowledge thereof. The second thing it treats of is, of the proper historie of the Indians, the which required much conference and travaile among the Indians themselves: the which most of them that have treated of the Indies could not doe, either not vnderstanding the language or not curious in the search of their Antiquities; so as they have beene contented to handle those things which have beene most common and superficiall. Desiring, therefore, to have some more particular knowledge thereof, I have

beene carefull to learne from men of greatest experience and best seene in these matters, and to gather from their discourses and relations what I have thought fit to give knowledge of the deedes and custome of these people. And for that which concernes the nature of those Countries and their properties, I have learned it by the experience of many friends, and by my dilligence to search, discover, and conferre with men of iudgement and knowledge. In my opinion, there are many advertisements which may serve and benefit better wits for the seaching out of the truth, or, to proceede farther, in finding that pleasing which is conteined herein. So, as although this new World be not new, but old, in respect of the much which hath beene written thereof; yet this historie may, in some sort, be held for new, for it is partly historicall and partly philosophicall, as well for that they are the workes of nature as of free will, which are the deedes and customes of men, the which hath caused mee to name it the *Naturall and Morall Historie of the Indies.* Containing these two things: In the first two bookes mention is made of that which concernes the heavens, temperature and habitation of the world, which books I had first written in Latine, and now I have translated them into Spanish, vsing more the liberty of an author then the strict bonds of a translator, to apply my self the better to those for whom it is written in the vulgar tong. In the two following books is treated of that which concernes the Elements and naturall mixtures, as Mettalls, Plants, Beasts, and what else is remarkable at the Indies. The rest of the bookes relate what I could certainely discover, and what I thought worthie memory of the Indians themselves, their Ceremonies, Customs, Governments, Wars, and Adventures. In the same Historie shall be spoken (as I could learne and comprehend) of the figures of the antient Indians, seeing they had no writing nor characters as we have, which is no small industry to have preserved their

Antiquities without the vse of letters. To conclude, the scope of this worke is, that having knowledge of the workes of nature, which the wise Author of all nature made, we may praise and glorifie the high God, who is wonderfull in all things and all places. And having knowledge of the Indians customes, we may helpe them more easily to follow and persevere in the high vocation of the Gospel; to the knowledge whereof the Lord would draw this blinde nation in these latter daies. Besides al these things, every one may sucke out some profit for himselfe; for that the wise do alwaies draw forth some good out of the smallest subiect, as we finde deepe Philosophie in the least and basest creatures. I must only advertise the reader, that the two first bookes of this historie or discourse were written in Peru, and the other five since in Europe, dutie binding me to returne into these partes: so as some speake of matters of the Indies as of things present, and others as being absent. And therefore I have thought it good to advertise the Reader heereof that this diversitie of speach may not be troublesome vnto him.

Farewell.

ANALYTICAL TABLE OF CONTENTS.

PAGE

DEDICATION TO THE INFANTA ISABELA - - xix

TRANSLATOR'S DEDICATION TO THE RIGHT HONOURABLE SIR ROBERT CICILL, KNIGHT - - - xxiii

TO THE READER - - - - - xxiv

NATURAL HISTORY.

BOOK I.

CHAPTER 1.—*Of the opinions of some authors which supposed that the Heavens did not extend to the new found land.*

View of St. Chrysostom - - - - 1

Opinions of Theodoret and Lactantius - - - 2

„ St. Jerome and St. Augustine - - 2

Fathers of the Church may err - - - 3

CHAPTER 2.—*That the Heaven is round, on all parts moving in his course of itself.*

Opinion of Aristotle correct - - - - 4

The Author's own experience - - - 4

Proofs that the earth is round - - - 5

Motions of the stars - - - - 6

Void places in the Heavens - - - - 7

CHAPTER 3.—*How the Holy Scripture teacheth us that the earth is in the middest of the world.*

Roundness of the Heavens - - - - 8

The waters - - - - - 9

The earth rests upon nothing - - 10

Wisdom of the Creator - - - - 11

CHAPTER 4.—*Containing an answere to that which is objected out of the Holy Scripture against the roundness of the earth.*

Explanation of St. Paul's words - - - 12
The letter kills; the spirit quickeneth - - 13

CHAPTER 5.—*Of the fashion and forme of Heaven at the new found land.*

Comparison of stars in North and South - - 14
The Southern Cross - - - - 14
Art of navigation - - - - - 15
Milky Way - - - - - 15

CHAPTER 6.—*That there is Land and Sea under the two Poles.*

Men as near Heaven in Peru as in Spain - - 15
The Pole Antarticke - - - - 16
Distribution of land and sea - - - 17
Land and sea at the Poles - - - - 18
Question of a North West Passage - - - 18

CHAPTER 7.—*To confute the opinion of Lactantius, who holdes there be no Antipodes.*

Lactantius and St. Augustine on the Antipodes - - 19
Reason corrects imagination - - - 20
The use of imagination - - - - 21

CHAPTER 8.—*The reason why St. Augustine denied the Antipodes.*

Opinions of St. Augustine - - - - 22
His difficulty in the greatness of the ocean - - 23
Concurrence of St. Gregory Nazianzen - - - 23
The Scriptures speak only of the then known world - 24

CHAPTER 9.—*Of Aristotle's opinion touching the new Worlde, and what abused him to make him deny it.*

Opinions of the ancients as to heat of the burning Zone - 25
Aristotle's opinion - - - - 25
Want of knowledge among the Ancients - - 26
Extreme cold and heat of Arctic and Torrid Zones - 27
The southern Zones - - - - 29

CHAPTER 10.—*That Plinie and the auncients held the same opinion with Aristotle.*

Pliny thought the tropics uninhabitable - - 29
Arguments of the ancients - - - - 30

CHAPTER 11.—*That in ancient Bookes we finde some knowledge of this newe world.*

Voyage of Hanno - - - - - 32
Voyage of Eudoxus - - - - 33
Ancient knowledge of the East Indies - - - 33
Sumatra and Malacca - - - - 33
Prophecy of Seneca - - - - 34

CHAPTER 12.—*Of the opinions which Plato held of the West Indies.*

Timæus and Critias - - - - 36
Interpretation of sayings of Plato - - - 36

CHAPTER 13.—*That some have held opinion that in places of Holy Scripture, whereas they speake of Ophir, is to be vnderstood of our Peru.*

Hispaniola said to be Ophir - - - - 37
Whether Peru be Ophir - - - - 37
Fancied resemblance of names - - - 38
Ophir was in the East Indies - - - 39

CHAPTER 14.—*What Tharsis and Ophir signify in the Holy Scriptures.*

Identification of Tarshish - - - - 40
Tarshish has divers meanings - - - 41
A general term - - - - - 42

CHAPTER 15.—*Of the Prophecie of Abdias, which some doe interpret to be the Indies.*

The discovery of America said to have been foretold in Scripture - - - - - 42
Prophecy of Obadiah - - - - 43
Sepharad (Zarephath) supposed to be Spain - - 43

Cities of the South may be the Indies - - - 43
Prophecy of Isaiah - - - - 44
Many nations to whom Christ has not yet been preached - 44

Chapter 16.—*By what meanes the first men might come to the Indies, the which was not willingly nor of set purpose.*

The New World not peopled by a miracle - - 45
Opinion of the Author - - - - 46
Passage in ships considered - - - - 46
New World not reached in ships - - - 47
The ancients were ignorant of the compass - - 48

Chapter 17.—*Of the properties and admirable virtue of the Adamante stone for navigation, whereof the Ancients had no knowledge.*

Use of the compass in navigation - - - 50
Virtues of the load stone - - - - 50
Time of its discovery uncertain - - - 51
Variation of the compass - - - - 52
Four points of no variation - - - - 52

Chapter 18.—*Wherein an answere is made to them that say that in times passed they have sailed through the Ocean as at this day.*

Long voyages not proved by Scripture - - 53
In ancient books no proof of long voyages - - 54
The ancients only coasted along the shore - - 54

Chapter 19.—*That we may conjecture how the first inhabitants of the Indies came thither by force of weather and not willingly.*

Story of the discovery of America by a nameless pilot - 54
Most new countries discovered by chance - - 55
Wonderful voyage recorded by Cornelius Nepos - - 55
Ship of Carthage driven to the New World - - 55
Giants said to have landed in Peru - - - 56
People of Yca and Arica sailed in South Sea - - 56
Most discoveries due to chance - - - 57

CHAPTER 20.—*Notwithstanding all that hath bene said, it is more likely that the first inhabitants of the Indies came by land.*

The beasts could not have come by sea - - 57
No new creation in America - - - 58
Beasts could not have swum to the New World - - 59
Belief of the Author in a narrow strait - - 60

CHAPTER 21.—*By what means tame beasts passed to the Indies.*

The Indians could only make short voyages - - 61
No beasts on the West Indian Islands - - 62
Animals reach islands by swimming - - - 63

CHAPTER 22.—*That the lineage of the Indians hath not passed by the Atlantis Island as some do imagine.*

The Atlantis of Plato - - - - 64
Atlantis a fable - - - - - 66
Pliny on Mount Atlas and Atlantis - - - 66

CHAPTER 23.—*That the opinion of many which hold that the first race of the Indians comes from the Jews is not true.*

A text of Esdras applied to the Indies - - 67
Resemblance between dress of Jews and Indians - - 67
Points of difference - - - - 68
The opinion confuted - - - - 69

CHAPTER 24.—*The reason why we can find no beginning of the Indians.*

The peopling of the Indies was gradual - - 69
The first arrivals savage and hunters - - - 70

CHAPTER 25.—*What the Indians report of their beginning.*

Tradition of a deluge - - - - 70
Origin of the Yucas - - - - 71
Origin of American civilizations - - - 72

BOOK II.

CHAPTER 1.—*That it is not out of purpose, but necessarie to treate of the nature of the Equinoctiall.*

The Equinoctial defined - - - - 73

CHAPTER 2.—*For what reasons the ancients held that the burning Zone was not inhabitable.*

Effect of Sun's motion on temperature . - 74
The further a country is from the Sun's course the colder - 74
The hottest near the Zodiacs - - - 74
Dryness and moisture caused by the Sun - - 75
Hence Aristotle's opinion of the Southern heat . - 75

CHAPTER 3.—*That the burning Zone is very moist, contrary to the opinion of the Ancients.*

Yet the burning Zone is inhabited - - - 76
The seasons occur, but at different times - - 76
Seasons of greatest moisture - - - 77

CHAPTER 4.—*That in the Regions which be without the Tropicks there is greatest store of waters whenas the Sunne is farthest off, contrary to that under the burning Zone.*

Climate of Chile - - - - - 78
Cause of inundation of the Nile - - - 78
Inundation of the Paraguay or river Plate - - 78

CHAPTER 5.—*That betwixt the two Tropicks the greatest aboundance of raine is in Summer, with a discourse of Winter and Summer.*

Winter and Summer in the Tropics - - - 79
Seasons in Peru - - - - - 80

CHAPTER 6.—*That the burning Zone abounds with waters and pastures, against the opinion of Aristotle who holds the contrarie.*

Abundance of Water in the Tropics - - - 81
The great river Amazons - - - - 82

Lake Titicaca - - - - - 83
Question of drainage of Titicaca - - - 84

CHAPTER 7.—*Shewing the reason why the Sunne without the Tropicks causeth greatest quantitie of waters when it is farthest off; and contrariwise within them it breedeth most when it is nearest.*

Rain caused by heat of the Sun - - - 84
Effect of the Sun on vapour - - - 85
Effect of heat on moisture - - - - 87
Dry regions in the tropics - - - . 88

CHAPTER 8.—*How wee should understand that which hath been formerly spoken of the burning Zone.*

Dry region on the coast of Peru - - - 88
Exceptions to natural rules - - - 89

CHAPTER 9.—*That the Burning Zone is not violently hotte, but moderate.*

Moderate heat in the tropics - - - 90
The Author's experience - - - - 90

CHAPTER 10.—*That the heat of the burning Zone is temperate, by reason of the rayne and the shortness of the dayes.*

Heat tempered by rain - - - - 91
Length of days and nights - - - - 92
Causes for moderate heat in the tropics - - 93

CHAPTER 11.—*That there be other reasons besides the former mentioned, which shew that the burning Zone is temperate, especially alongst the Ocean.*

Causes for temperate climate in the tropics - - 94
The sea tempers the heat - - - - 95

CHAPTER 12.—*That the highest lands are the coldest, and the reason thereof.*

The middle region of the air the coldest - - 96
Nature of the elements - - - - 97

Chapter 13.—*That the colde windes be the principall cause to make the burning Zone temperate.*

Coolness of the night not sufficient to moderate Sun's heat - 99
Effect of winds in the tropics - - - 99
Land and Sea Breezes - - - - 100

Chapter 14.— *That they which inhabite under the Equinoctiall live a sweete and pleasant life.*

Importance of healthy air - - - - 101
A healthy life possible in the tropics - - - 103

These two books written in the Indies. The five following in Europe - - - - - 103

BOOK III.

Chapter 1.—*That the naturall Historie of the Indies is pleasant and agreeable.*

He that takes delight in the works of nature shall taste the true pleasure of Histories - - - 104
The Author will write briefly - - - 105

Chapter 2.—*Of the windes, their differences, properties, and causes in generall.*

Properties of the winds - - - - 106
Names of winds - - - - - 107

Chapter 3.—*Of certaine properties of windes which blowe at the new worlde.*

Origin of the south wind - - - - 110
Winds in Peru - - - - - 111

Chapter 4.—*That in the burning Zone the Brisas, or Easterly windes do continually blowe, and without the Zone the westerne, and that the Easterly are ordinarie alwaies there.*

The trade windes - - - - - 113

Voyages of the Spanish fleets - - - 114
Navigation in the South Sea - - - 115
Winds without the tropics - - - - 116

CHAPTER 5.—*Of the differences of the Brisas or Easterne windes, and the Westerne, and likewise of other windes.*

Direction of the trade winds - - - 117
Names of the winds - - - - 119

CHAPTER 6.—*What is the reason why, sailing vnder the burning Zone, we finde alwayes Easterly windes.*

Cause of the trade winds - - - - 121
Motion of the Comet of 1577 - - - 122
Father Alonzo Sanches on trade winds - - - 124

CHAPTER 7.—*Why, without the Zone, in a greater altitude, we finde alwayes westerly windes.*

Explanation of westerly winds outside the tropics - 125
Variable winds in 40° N. Lat. - - - 125

CHAPTER 8.—*Of the exceptions to the foresaid Rules, and of the Windes and Calmes, both at Land and at Sea.*

On land the same rule does not hold - - - 125
Land and Sea Breezes - - - - 126
Rain-bearing winds - - - - 127
The author's voyage from Peru to Mexico - - 127

CHAPTER 9.—*Of some marvellous effects of the windes, which are in some partes of the Indies.*

Strange effects of winds - - - - 128
Sea sickness - - - - - 129
Sickness at great heights - - - - 130
Remedy for sickness - - - - 131
Intense cold of the Punas - - - - 132

CHAPTER 10.—*Of the Ocean that environs the Indies, and of the North and South Seas.*

No inland seas - - - - - 135

The South Sea - - - - - 135
Question of cutting the Isthmus - - - 135
Straits of Magellan - - - 136
Voyages of Drake and Sarmiento - - - 137

CHAPTER 11.—*Of the Straight of Magellan, and how it was passed on the south side.*

Expedition of Sarmiento - - - - 137

CHAPTER 12.—*Of the Straight which some holde to be in Florida.*

The North West Passage - - - - 141

CHAPTER 13.— *Of the properties of the Straight of Magellan.*

Depth. Length - - - - - 142
Tides - - - - - - 143

CHAPTER 14.—*Of the ebbing and flowing of the Indian Ocean.*

Tides in the Mediterranean - - - 144
Tide at Panama - - - - - 145
Tide in Magellan Straits - - - - 145

CHAPTER 15.—*Of sundry Fishes, and their manner of fishing at the Indies.*

Fish in the South Sea - - - - 146
Manati - - - - - 146
Voracity of sharks - - - - 147
Caymans - - - - - 147
Alligators - - - - - 148
Whale fishing - - - - - 149
Fishing in balsas - - - - 150
Chirihuana fishing - - - - 151

CHAPTER 16.—*Of Lakes and Pooles that be at the Indies.*

Lake Titicaca - - - - - 151
Lakes in the Andes - - - - 152
Lakes in Mexico - - - - - 153

CHAPTER 17.—*Of many and divers Springs and Fountains.*

Hot spring at Huancavelica - - - 154

Springs of pitch - - - - - 155
Fountain of salt near Cuzco - - - 155
Springs flowing by sarsaparilla plants - - - 156
Springs rising on Vilcañota - - - - 156
Colored springs - - - - - 156

CHAPTER 18.—*Of rivers.*

River Marañon or Amazons - - - 156
Passage of the Pongo - - - - 157
Paraguay or river Plate - - - - 158
Magdalena - - - - - 158
Passage of rivers. Irrigation - - - 159

CHAPTER 19.—*Of the qualitie of the land at the Indies in generall.*

Coast valleys of Peru - - - - 160
Sierra of Peru - - - - - 161
Temperate valleys - - - - 162

CHAPTER 20.—*Of the properties of the land of Peru.*

Extent of Peru - - - - - 163
Physical features of Peru - - - - 164
Rainfall in Peru - - - - - 165
The Collao - - - - - 166

CHAPTER 21.—*The reason why it does not rain on the Llanos, along the sea coast.*

Cause of no rain on the coast of Peru - - - 167
Fertilizing mists - - - - - 168

CHAPTER 22.—*Of the propertie of new Spaine, of the Ilands, and of other Lands.*

Vineyards in Peru - - - - 168
Pastures in Mexico - - - - 168
Soil of the Antilles - - - - 169
Climate of Chile - - - - - 170

CHAPTER 23.—*Of the unknowne Land, and the diversitie of a whole day betwixt them of the East and the West.*

Conjectured land of Australia - - - 170

Unknown parts - - - - - 171
Discoveries between Peru and Brazil - - - 172
Difference of time - - - - 173

CHAPTER 24.—*Of the Volcanos or Vents of Fire.*

Description of volcanoes - - - - 174
Volcano at Guatimala - - - - 175
Ashes from Volcano near Quito - - 175

CHAPTER 25.—*What should be the reason why the fire and smoake continue so long in these Volcanos.*

Cause of irruptions - - - - 176
Death of Pliny - - - - - 177

CHAPTER 26.—*Of Earthquakes.*

Earthquakes in sympathy with volcanos - - 178
Great earthquake in Chile - - - - 179
Earthquake of Arequipa in 1582 - - - 179
Earthquake 9 June, 1586, at Lima - - - 179
Earthquake at Quito - - - - 179
Sea coast most subject to earthquakes - - 180
Land slip at Angoango - - - - 180

CHAPTER 27.—*How the land and sea imbrace one another.*

Indentations of coast lines - - - - 181
Shape of South America - - - - 182

BOOK IV.

CHAPTER 1.—*Of three kindes of mixtures or compounds, of the which I must intreate in this Historie.*

Metals - - - - - 183
Plants - - - - - 184
Animals - - - - - 184
Study of God's works - - - - 184

CHAPTER 2.—*Of the abundance and great quantitie of Mettall at the West Indies.*

Uses of metals - - - - - 185
Gold and silver - - - - - 186
Mineral wealth of Peru - - - - 187

CHAPTER 3.—*Of the qualitie and nature of the earth where the mettalls are found, and that all these mettalls are not imployed at the Indies, and how the Indians used them.*

Mineral wealth generally in barren lands - - 188
Gold, silver, and copper - - - - 188
Use of barter - - - - - 189

CHAPTER 4.—*Of gold which they dig and refine at the Indies.*

The Yncas had abundance of gold - - - 191
Found in grains - - - - - 191
In veins - - - - - 192
Mines of Caravaya and Valdivia - - - 192
Method of refining - - - 193

CHAPTER 5.—*Of the silver of the Indies.*

Veins of silver - - - - - 195
Method of refining by Indians - - - 195
196

CHAPTER 6.—*Of the mountaine or hill of Potosi and the discovery thereof.*

Situation of the mines of Potosi - - - 197
Description of the hill - - - - 198
Discovery of the mines - - - - 198

CHAPTER 7.—*Of the treasure which is daily drawne from the rocke or mountaine of Potosi.*

Pliny on the mines of Spain - - - 201
Yield of Potosi - - - - - 202
King's share - - - - - 203
Amount sent home in 1587 - - - - 204

CHAPTER 8.—*How they labour in the mines of Potosi.*

Great labour and peril of mining - - - 205
Chief veins at Potosi - - - - 206
Number of Mines - - - - 207
Labour in continual darkness - - - 207
Method of working - - - - 208

CHAPTER 9.—*How they refine the Mettall of Silver.*

Kinds of silver ores - - - - 209
Method of refining with furnaces - - - 210
With quicksilver - - - - - 210

CHAPTER 10.—*Of the wonderful properties of Quick silver.*

Properties of quicksilver - - - - 211

CHAPTER 11.—*Of the place where they finde quicksilver, and how they discovered these rich mines in Huancavilca.*

Vermillion - - - - - 214
Discovery in Peru - - - - 215
Mercury brought to Potosi in 1571 - - - 217
King's profit from Huancavilca mine - - - 217

CHAPTER 12.—*The manner how to drawe out Quick-silver and how they refine silver.*

Method of working the quicksilver mine - - 217
Transport to Potosi and the coast - - - 218
Use in refining silver - - - - 219

CHAPTER 13.—*Of their engines to grinde the mettall, and of their triall of silver.*

Method of grinding silver ores - - - 220
Water mills - - - - - 222
Assay Master; Alloy - - - - 223
Testing the silver - - - - 223

CHAPTER 14.—*Of Emeraldes.*

Value of emeralds - - - - 224
Localities where found - - - - 225

CHAPTER 15.—*Of Pearles.*

Grow in oyster shells 226
Fisheries 227
Yield 228

CHAPTER 16.—*Of the Indian bread and of maize.*

Bread of Peruvians made of maize . . . 229
Description of maize 229
Different kinds 229
Various ways of cooking it 230
Fermented liquor from maize . . . 230

CHAPTER 17.—*Of Yucas, Caçavi, Papas, Chuñus, and Rice.*

Cassava bread made from Yuca . . . 232
Potatoes 233
Method of making *Chuñus* 233
Rice 234

CHAPTER 18.—*Of divers rootes which growe at the Indies.*

Various edible roots 235
Abundant Spanish roots in Peru . . . 235

CHAPTER 19.—*Of divers sortes of green Herbes and Pulses, and of those they call Pepinos and Pine Apples, Strawberries of Chile, and of Cherries.*

Pine apples 236
Pepinos 237
Calabashes 238

CHAPTER 20.—*Of Axi or Indian Pepper.*

Ginger grown in the Indies 239
Cultivation of capsicum 239
Capsicum very hot, but much used . . . 240

CHAPTER 21.—*Of the Plantain.*

Cultivation of the plantain 241
Description of the plant 242
May be used for paper 244

CHAPTER 22.—*Of Cacao and Coca.*

Description of the Cacao 244
Chocolate made from it 245
Coca in Peru 245
Value of coca 245
Cultivation of coca 246
Used by the Yncas 246

CHAPTER 23.—*Of Maguey, Tunal, Cochenelle, Anis, Cotton.*

Uses of Maquey 247
Prickly pear or Tunal 247
Cochineal 248
Cotton 249

CHAPTER 24.—*Of Mamays, Guayavos, and Paltas.*

Mamay apples 249
Guayavos 250
Alligator pears 250

CHAPTER 25.—*Of Chicoçapote, Anonas, and Capolies.*

Chirimoyas 251

CHAPTER 26.—*Of various sortes of fruit Trees, of Cocos, Almondes of the Andes, and Almondes of Chachapoyas.*

Guavas 252
Lucmas 252
Paccays 252
Cocoa nuts 253

CHAPTER 27.—*Of many and diverse flowers, and of some trees which yeelde only a flower, and how the Indians do use them.*

The Indians love flowers 255
Numerous kinds of flowers 255
The *Datura* 255
Granadillas 256

CHAPTER 28.—*Of Balsam.*

Balsam of the Indies 257
Different kinds 257

CHAPTER 29.—*Of Amber and other Oyles, Gums, and Drugges, which they bring from the Indies.*

Liquidambar 259
Cassia fistula 260
Storax and copal 260
Sarsaparilla 260
Brazil wood 260
Purgatives 261
Tobacco 261

CHAPTER 30.—*Of great forrests at the Indies of Cedars, of Cayvas, and other great trees.*

Great variety of timber trees . . . 262
Strange adventures in a forest . . . 262
Cedars and Laurels 263
Palms 263
Oak of Guayaquil 263
Bamboos 263
Schinus Molle 264

CHAPTER 31.—*Of Plants and fruits which have bin carried out of Spaine to the Indies.*

Corn and garden vegetables 265
Fruit trees 265

CHAPTER 32.—*Of grapes, vines, olives, mulberries, and canes of sugar.*

Vineyards in Peru 267
Fig-tree at Mala 268
Mulberries and silk-worms 269
Sugar estate at Nasca 269
Olives in Mexico and Peru 269

CHAPTER 33.—*Of Beasts bearing wooll and of kine.*

Sheep and cloth-making 270
Wild cattle in St. Domingo 271
Trade in hides 271
Horses and dogs 272

CHAPTER 34.—*Of some Beasts of Europe which the Spaniardes found at the Indies, and how they passed thither.*

Fierce and wild beasts the same as in the Old World . 273
Indian hunts called *Chacu* 273
Tigers and beasts 274
Bees and honey 274

CHAPTER 35.—*Of Fowles which are heere, and are at the Indies, and how they could passe thither.*

Partridges, pigeons, herons, eagles . . . 275
Parrots 275
Birds might pass the sea 275
Hens and eggs 276

CHAPTER 36.—*How it should be possible that at the Indies there should be anie sortes of beasts, whereof the like are no where else.*

All animals must have passed from the Old World . 277
God may have made a new creation of beasts . . 277
Very different from those of Europe . . . 278

CHAPTER 37.—*Of fowles that are proper to the Indies.*

Birds of Paradise from China . . . 279
Humming birds in Peru 279
Condors and Turkey buzzards . . . 279
Macaws 279
Work in feathers 280
Guano and its use as manure . . . 281

CHAPTER 38.— *Of Beasts for the Chase.*

Peccaries 282
Tapirs 283
Armadillos and Yguanas 283
Chinchillas and Uiscachas 284

CHAPTER 39.—*Of Micos or Indian Monkeys.*

Various kinds of monkeys 285
Tricks of monkeys 285

CHAPTER 40.—*Of Vicuñas and Tarugas of Peru.*

Description of Vicuñas 287
Vicuña hunts 287
Wool and cloth made from it 287

CHAPTER 41.—*Of Pacos, Huanacos, and Sheep of Peru.*

Uses of llamas and alpacas 289
Llamas beasts of burden 290
Disease of llamas 291

CHAPTER 42.—*Of the bezoar stone.*

Bezoar stone found in llamas, etc. . . . 292
Virtues of the bezoar stone 294

THE

NATURAL HISTORY.

THE FIRST BOOKE

Of the Naturall and Morall Historie of the East and West Indies.

CHAP. I.—*Of the opinions of some Authors, which supposed that the Heavens did not extend to the new-found world.*

THE Ancients were so farre from conceypt that this new-found world was peopled by any Nation, that many of them could not imagine there was any land on that part; and (which is more worthie of admiration) some have flatly denyed that the Heavens (which we now beholde) could extend thither. For although the greatest part (yea, the most famous among the Philosophers) have well knowne that the Heaven was round (as in effect it is), and by that meanes did compasse and comprehend within it self the whole earth; yet many, (yea, of the holy doctors of greatest authoritie) have disagreed in opinion vpon this point; supposing the frame of this vniversall world to bee fashioned like vnto a house; whereas the roofe that covers it invirons onely the upper part and not the rest; inferring by their reasons, that the earth should else hang in the middest of the ayre, the which seemed vnto them voyd of sense. For as we see in every building, the ground-worke and foundation on the one side, and the cover opposite vnto it, even so in this great building of the world, the Heaven should remaine above on the one part, and the earth vnder it. The glorious Chrysostome (a man better seene in the studie of holy Scriptures then in the knowledge of Philosophie) seemes to be of this opinion, when in his Commentaries

Lib. i.

vpon the Epistle to the Hebrewes, he doth laugh at those which hold the heavens to be round. And it seemes, the holy Scripture doth inferre as much, terming the Heavens a Tabernacle or Frame built by the hand of God. And hee passeth farther vpon this point, saying, that which mooves and goes is not the Heaven, but the Sunne, Moone, and Starres, which moove in the heaven, even as Sparrowes and other birds moove in the ayre; contrary to that, which the Philosophers hold, that they turne with the Heaven it selfe, as the armes of a wheele doe with the wheele. Theodoret, a very grave Authour, followes Chrysostome in this opinion, and Theophilus likewise, as hee is accustomed almost in all thinges. But Lactantius Firmian, above all the rest, holding the same opinion, doth mocke the Peripatetickes and Academickes, which give the heaven a round forme, placing the earth in the middest thereof; for that it seemeth ridiculous vnto him, that the earth should hang in the ayre, as is before sayde. By which his opinion he is conformable vnto Epicurus, who holdeth, that on the other part of the earth there is nothing but a Chaos and infinite gulph. And it seemeth that S. Ierome draweth neere to this opinion, writing vpon the Epistle to the Ephesians in these wordes: "The naturall Philosopher by his contemplation pierceth to the height of heaven, and on the other part he findeth a great vast in the depth and bowels of the earth." Some likewise say that Procopius affirmes (the which I have not seene) vpon the booke of Genesis, that the opinion of Aristotle, touching the forme and circular motion of the Heaven is contrarie and repugnant to the holy Scriptures. But whatsoever the Ancients say or holde touching this point, it must not trouble vs, for that it is wel knowne and verified that they have not beene so studious in the knowledge and demonstrations of Philosophie, being busied in other studies of farre greater importance. But that which is more to be admired is, that S. Augustine himselfe, so well seene in all

Chrysost., homil. xiv and xvii, in epist. and Hebre.

Chrys., hom.vi, xiii, in Genes. and hom. xii, & pop. Antioch.

Theodoret.

Theophil. in capitul. 8, ad Hebre.

Lact.,lib.iii, divin. inst., ca. 24.

Ier. in epist. ad Ephes., lib. ii, c. 4.

Sixtus Senens., lib. v, biblio. annotat. iii.

naturall Sciences, yea, very learned in Astrologie and Physicke, remaynes yet still in doubt, not able to resolve, whether the Heaven did compasse in the earth on all parts. "What care I", saith he, "if we suppose the Heaven doth inviron the earth on all parts like vnto a bowle,[1] beeing in the middest of the world, as a bottome is compassed with threed:[2] or that we say it is not so, and that the Heaven covereth the earth of one part onely as a great Basin that hangs over it."[3] In the same place he seemeth to shew (nay, hee speaketh plainely) that there is no certaine demonstration to proove the figure of the world to be round, but onely by simple coniectures. In which places cited and others, they hold the circular motion of the Heaven very doubtfull. But wee ought not to take it offencively, nor esteeme lesse of the Doctors of the holy Church, if in some points of Philosophie and naturall knowledge, they have varied in opinion from that which is helde for good philosophie; seeing all their studie hath been to know, preach, and serve the Creator of all things, wherein they have bin excellent, and having well imployed their studies in causes of greater waight, it is a small matter in them not to have knowen all particularities concerning the creatures. But those vaine Philosophers of our age are much more to bee blamed who, having attayned to the knowledge of the being and order of the creatures, and of the course and motion of the Heavens, haue not yet learned (wretched as they are) to knowe the Creator of all things, but busying themselves wholly in his workes, have not yet mounted by their imaginations to the knowledge of the Soveraigne Author thereof as the holy Scripture teacheth vs; or if they have knowne him, they have not served and glorified him as they ought, blinded with their imaginations, whereof the Apostle doth accuse and blame them.

LIB. I.

Aug., lib. ii, de Gen. ad lit. c. 9.

Id. Psal. xxxv.

Sapien. xiii. Rom. i.

[1] "Como una bola."

[2] "Estando ella en medio del mundo como en el fil."

[3] "Como un plato grande que esta encima."

CHAP. II.—*That the Heaven is round on all parts, mooving in his course of it self.*

LIB. I.

But comming to our subiect, there is no doubt but the opinion which Aristotle and the other Peripateticks held with the Stoicks (that the figure of Heaven was round, and did moove circularly in his course), is so perfectly true, as we which doe now live in Peru see it visibly. Wherin experience should be of more force then all Philosophicall demonstrations, being sufficient to proove that the Heaven is round, and comprehends and contaynes the earth within it of al parts. And to cleere any doubt that might grow, it sufficeth that I have seene in this our Hemisphere that part of Heaven which turnes about this earth, the which was vnknowne to the Ancients; and have observed the two Poles whereon the Heavens turne, as vpon their Axeltrees. I say, the Articke, or North Pole, which those of Europe beholde, and the other Antarticke, or Southerne Pole (whereof saint Augustine is in doubt), the which we change and take for the North here at Peru, having passed the Equinoctiall line. Finally, it sufficeth that I have sayled neere 70 degrees from North to South, that is, forty of the one side of the line and 23 on the other, omitting at this present the testimony of others which have sayled much farther then my selfe, and in a greater height, comming neere 70 degrees towards the South. Who will not confesse but the ship called the *Victorie*[1] (worthie doubtlesse of eternall memorie) hath wonne the honor and praise to have best discovered and compassed the round earth, yea, that great Chaos and infinite Vast which the ancient Philosophers affirmed to bee vnder the

Aug., lib. ii, de Genes., ad lit., cap. 10.

[1] Magellan's ship, which is represented on the covers of the volumes of the Hakluyt Society. See an account of her at page 16 (note) of vol. i of my translation of the first part of the *Royal Commentaries of the Yncas*, by the Ynca Garcilasso de la Vega. (Hakluyt Society's volume for 1869.)

earth, having compassed about the worlde and circled the vastnesse of the great Oceans. Who is hee then that will not confesse by this Navigation but the whole earth (although it were bigger then it is described) is subiect to the feet of man, seeing he may measure it? Thus, without doubt, the Heaven is of a round and perfect figure; and the earth likewise imbracing and ioyning with the water makes one globe or round bowle framed of these two elements, having their bounds and limits within their own roundnes and greatnes. The which may be sufficiently proved by reasons of Philosophie and Astrologie, leaving al subtil definitions commonly obiected. That, to the most perfect body (which is the Heaven), we must give the most perfect figure, which, without doubt, is round, whose circular motion could not be firme nor equall in it selfe, if it had any corner or nooke of any side, or if it were crooked (as of necessitie it must be), if the Sun, Moone, and Stars made not their course about the whole world. But leaving all these reasons, it seemes that the Moone is sufficient in this case as a faithfull witnesse of the Heaven it selfe, seeing that her Eclypse happens, but when as the roundnesse of the earth opposeth it selfe diametrally betwixt her and the Sunne, and by that meanes keepes the Sunnebeames from shining on her. The which could not chance if the earth were not in the midst of the world, compassed in and inironed by the whole Heaven. Some haue doubted whether the light of the Moone were borrowed from the brightnes of the Sunne; but it is needlesse, seeing there can bee found no other cause of the Eclipses, full, and quarters of the Moone, but the communication of the beames which proceed from the Sunne. In like sort, if wee will carefully examine this matter, we shall finde that the darkenesse of the night proceedes from no other cause but from the shadow which the earth makes, not suffering the light of the sunne to passe to the other parte of the heaven, where

Aug., ep. cix, ad Januarium, cap. 6.

Lib. i.

his beames shine not. If then it be so, that the sunne passeth no farther, neyther doth cast his beames on the other part of the earth, but onely turnes about, and returnes to his setting, making a ridge vpon the earth by his turning (the which he must of force confesse that shall denie the roundnes of the heaven, seeing (according to their saying) the heaven as a basen doth onely couer the face of the earth), it should then plainly follow that wee could not obserue the difference betwixt the daies and nights, the which in some regions be short and long according to the seasons, and in some are alwaies equall, the which S. Augustine noteth in his bookes *De Genes. ad litteram.* That we may easily comprehend the oppositions, conversions, elevations, descents, and all other aspects and dispositions of planets and starres, when we shall vnderstand they move, and yet notwithstanding the heaven remaines firme and immoveable. The which seemeth to me easie to comprehend, and will be to all others, if it may be lawfull to imagine that which my fancy doth conceive ; for if we suppose that every star and planet be a body of it selfe, and that it be led and guided by an Angell, as Habacuc was carried into Babilon, who I pray you is so blind but seeth that all the diverse aspects which we see appeare in planets and starres may proceede from the diuersity of motion which he that guides them doth voluntarily giue them. We cannot then with any reason affirme but that this space and region by which they faine that stars do continually march and rowle is elementarie and corruptible, seeing it divides it selfe when they pass, the which vndoubtedly do not passe by any void place. If then the region wherein the starres and planets move be corruptible, the stars and planets of their owne motion should be by reason likewise corruptible, and so by consequence they must alter, change, and be finally extinct ; for naturally that which is conteined is no more durable then that which conteineth. And to say that

August., lib. de Genes. ad litteram, cap. 19.

Dan. xiv.

the Celestiall bodies be corruptible, it agreeth not with the psalme, "That God made them for euer": And it is lesse conformable to the order and preservation of this vniversall world. I say moreover, to confirme this truth, that the heauens move, and in them the starres march in turning, the which we cannot easily discerne with our eyes, seeing we see that not onely the starres do moue, but also the regions and whole parts of heaven; I speake not onely of the shining and most resplendent parts, as of that which we call *Via lactea,* and the vulgar S. Iaques way, but also of the darker and obscurer parts of heaven. For there we see really as it were spots and darkenes, which are most apparent: the which I remember not to haue seene at any time in Europe, but at Peru, and in this other Hemisphere I haue often seene them very apparant. These spots are in colour and forme like vnto the Eclips of the Moone, and are like vnto it in blacknes and darkenes; they march, fixed to the same starres, alwaies of one forme and bignes, as we haue noted by infallible observation. It may be this will seeme strange to some, and they will demand whence these spots in heaven should grow. To the which I cannot answere otherwise at this time, but (as the Philosophers do affirme) that this *Via lactea,* or milken way, is compounded of the thickest parts of the heaven, and for this cause it receiues the greater light; and contrariwise, there are other parts very thinne and transparent, the which receiuing lesse light seeme more blacke and obscure. Whether this be the true reason or no I dare not certenly affirme. Yet is it true that, according to the figure these spots have in heaven, they moue with the same proportion with their starres without any separation, the which is a true, certaine, and often noted experience. It followeth then by all that we haue said, that the heaven containeth in it all the parts of the earth, circling continually about it, without any more doubt.

Psal.cxlviii.

Chap. iii.—*How the holy Scripture teacheth vs that the earth is in middest of the world.*

Lib. i.

Although it seemes to Procopius Gaza,[1] and to some others of his opinion, that it is repugnant to the holy Scripture to place the earth in the middest of the world, and to say that the heaven is round, yet in truth this doctrine is not repugnant, but conformable to that which it doth teach vs. For laying aside the tearmes which the Scripture it selfe doth vse in many places, "The roundnesse of the earth"; and that which it sayeth in an other place, that whatsoever is corporeall is invironed and compassed in by the heavens and conteyned within the roundnes thereof, at the least they cannot deny but that place of Ecclesiastes is very plaine where it is said, "The Sunne riseth and sets, and returnes to the same place, and so begins to rise againe; he takes his course by the South, turning towards the North; this spirit marcheth compassing about all thinges, and then returnes to the same place." In this place the paraphrase and exposition of Gregorie Neocesarien, or Nazianzene, sayeth, "The Sunne hauing runne about the whole earth, returnes as it were, turning to the same point." That which Solomon sayeth (being interpreted by Gregorie) could not be trve if any part of the earth were not invironed with the heaven. And so S. Ierome doth vnderstand it, writing vpon the Epistle to the Ephesians in this sort, "The most common opinion affirmes (agreeing with Ecclesiastes) that the heaven is round, mooving circularly like vnto a bowle." And it is most certaine that no round figure conteyneth in it eyther longitude, latitude, heigth, or depth, for that all parts are equall. Whereby it appeares, according to S. Ierome, "That those which hold the heaven to be round are not repugnant to the holy Scripture, but conformable to the same." And although that S. Basile especially, and S. Ambrose (who doth vsually imitate him in his bookes called

Hest. xiii. Sap. i, ii, vii, xi, xviii. Psal. xci, vii, xxiii, xxxix, xcvii. Job xxxvii. Eccles. i.

Ierom., cap. 3, ad Ephes.

Basil., hom. ii, i. Hexam. prope finem

[1] Gozes.

Hexameron) seeme somewhat doubtfull of this point, yet in the end they grant that the world is round. It is true that S. Ambrose doth not yeelde to this quintessence[1] which Aristotle attributes to the heavens, without doubt it is a goodly thing to see with what a grace and excellent stile the holy Scripture treates of the scituation and firmenes of the earth to breed in vs a wonderfull admiration, and no lesse content to behold the vnspeakable power and wisedome of the Creator. For that in one place God himselfe saies that it was hee which planted the pillers which support the earth; giving vs to vnderstand (as S. Ambrose doth well expound it) that the vnmeasurable weight of the whole earth is held vp by the hands of the divine power. The holy Scripture doth commonly so call them, and vseth this phrase, naming them the pillers of heaven and earth, not those of Atlas, as the Poets faine, but of the eternall word of God, who by his vertue supports both heaven and earth. Moreover, the holy Scripture in an other place teacheth, that the earth, or a great part thereof, is ioyned to and compassed in by the Element of water, speaking generally, that God placed the earth vpon the waters. And in another place, that hee framed the roundnes of the earth vpon the Sea. And although S. Augustine doth not conclude vpon this text, as a matter of faith, that the earth and the water make one globe in the midst of the world, pretending by this meanes to give another exposition to the words of the Psalme; yet notwithstanding it is most certaine that by the words of the psalme we are given to vnderstand that we haue no other reason to imagine any other ciment or vniting to the earth then the Element of water, the which although it be pliant and moveable, yet doth it support and inviron this great masse of the earth, the which was wrought by the wisedome of that great Architect. They say, the earth is built vpon the waters and vpon the sea; but contrariwise, the earth is rather vnder the waters; for according to com-

Lib. i.

Amb., lib. v Hexam., cap. 6.

Psal. lxxiv.

Amb. i, Hexa.

Job ix, 26.

Heb. i.

Aug. in Ps. cxxxv.

[1] "Quinta substantia."

Lib. i. mon iudgement and imagination, that which is on the other part of the earth which we inhabite seemes to be vnder the earth, and so by the same reason, the waters and sea which doe compasse in the earth on the other part should be vnderneath and the earth above; yet the very truth is, that what is properly beneath that is alwaies in the midst of the vniversall; but the holy scripture frames it selfe to our manner of conceiving and speaking. Some may demaund (seeing the earth is set vpon the waters, as the scripture sayeth) whereon the waters are placed and what support haue they? And if the earth and the water make one round globe, how can all this monstrous masse be sustayned? To this the holy scripture answereth them in another place, giving vs greatest cause to admire the power of the Creator, and

Job xxvi. saith in these wordes, "The earth extends towards the North vpon the Vast, and stayes hanging vpon nothing." The which in trueth is very well spoken, for that really it seemes this heape of earth and water is set vpon nothing, when we describe it in the middest of the ayre, as in trueth it is. But this wonder, which men so much admire, God

Job xxxviii. himselfe hath not layd open, demanding of the same Iob in these termes—"Tell mee if thou canst, who hath layd the lyne or cast the lead for the building of the world, and with what morter the foundations have beene layed and ioyned." Finally, to make vs vnderstand the fashion and modell of this admirable frame of the world, the Prophet Dauid, accustomed to sing and praise his divine works, saies very well in a Psalme made of this subiect in these wordes,

Psal. ciii. "Thou which hast built the earth vpon firmenes it selfe, that it cannot stagger nor move for ever and ever." Meaning to shew the cause why the earth set in the midst of the ayre falleth not, nor staggereth from place to place, for that by nature it hath sure foundations, layed by the most wise Creator, to the end it might sustaine it selfe without any other support. Mans imagination is therefore

deceiued in this place, seeking other foundations of the earth, and for want thereof, doth measure diuine things according to humaine reason. So that we neede not to feare (how great or heavy soever this masse of earth then hanging in the aire seemeth to be) that it can fal or turne topsy turuy, being assured vpon this point; for that the same Psalmist saieth that it shall neuer be overthrowne. Truly Dauid with reason (after he had beheld and sung the wonderfull workes of the Lord) doth not cease to praise him in the same, saying, "O, how great and wonderfull are the workes of the Lord." It appeares that all spring from his knowledge. And in truth (if I shall freely speake my opinion touching this point), often in my trauell passing the great gulfes of the Ocean, and marching by other regions of so strange lands, staying to behold and consider the greatnes of these workes of the Lord, I felt a wonderfull consolation of the soveraigne wisedome and greatnes of the Creator, who shines in his works; in comparison whereof all the Pallaces, Castells, and princely buildings, together with all the inventions of man, seeme nothing, yea, are base and contemptible in respect thereof. O how often hath come into my minde and mouth that place of the Psalme which sayeth thus—"Great comfort hast thou given me, O Lord, by thy workes; I will not cease to reioyce in the contemplation of the workes of thy hands." Really and in truth the workes of God haue (I know not what) secret and hidden grace and vertve; the which although they be often beheld, yet do they still cause a new taste and content, whereas contrariwise, the workes of man, although they be built with exquisite art, yet often seene, they are no more esteemed, but breede a distaste; be they most pleasant Gardins, Pallaces, or stately Temples, be they Piramides of proud buildings, Pictures, carved images, or stones of rare worke and invention, or whatsoever else adorned with all the beauties possible. Yet is it most certen that viewing

Psal. ciii.

Lib. i. them twice or thrice with attention, the eye presently turnes away, being glutted with the sight thereof. But if you beholde the sea with attention, or some steepe mountaine growing from a plaine to a strange heigth, or the fieldes clad in their naturall verdure with pleasant flowres, or the raging course of some river beating continually against the rocks, finally, what worke of nature soever, although it be often viewed, yet doth it still breede a new content, and never gluttes the sight; the which is like vnto a stately bancket of the divine wisedom, which doth alwaies cause a new consideration without any lothing.

Chap. iv.—*Containing an answere to that which is obiected out of the holy Scripture, against the roundnes of the earth.*

Returning then to the figure of heaven, I know not out of what authoritie of the holy scripture they can prove that it is not round, nor his motion circular: neither do I
Heb. viii. see (whereas S. Paul calles the heaven a Tabernacle, or a Tent which God made, and not man:) how can it be applied to this purpose: for although he telleth vs that it was made by God, yet must we not therefore coniecture that the heaven covereth the earth like to a roofe on the one part only, neither that the heaven was framed without motion, as it seemes some would inferre. The Apostle in this place treated of the conformity of the auncient Tabernacle of the lawe, saying therevpon, that the Tabernacle of the new law of grace is heaven: into the which, the great Priest Iesus Christ, entred once by his bloud: and thereby is vnderstood, that there is as great preheminence of the new aboue the old, as there is difference betwixt the author of the new, which is God, and of the olde which was man: although it be most certen, that the olde was built by the

wisedome of God, who instructed his workman Bezeleell. Lib. i. Exo. xxxvi. Neither must we imagine that these comparisons, parables, and allegories, doe in all things agree with that wherevnto they are applyed, as the happy Crysostome hath learnedly spoken vpon this point. Chrisost. in 20 cap. The other authoritie (which S. Augustine saies is alleaged of some to shew that the heaven is not round) is this, "The heavens stretch forth like vnto a skin." Psal. ciii. Whereby he concludes that it is not round, but flat on the vpper part, wherevnto the same Doctor doth answere verie well and familiarly, giuing vs to vnderstand that that place of the Psalme is not properly to be vnderstood of the figure of heaven, but onely to shew with what facilitie God built so great a heaven, being no more painefull for him to build so huge a couer as the heaven is, then to vnfould a double skin. Aug. ii, de Gen. ad litteram., c. ix. Or else the Psalmist pretending to shew vs the great maiesty of God, to whome the heaven, with his greatnes and beautie, doth serve in like manner as our tents and pavilions in the field. The which was well expressed by a Poet calling it, "The Tent of the cleere heaven". In like sort, the place of Isaii, which sayeth, "Heaven serves mee as a chaire, and the earth for a foote-stoole". Isaie lxvi. But if wee follow the error of the Antromorphites, which did atribute corporall members vnto God, according to his divinitie, we should haue occasion vppon this last text, to examine how it were possible the earth should be a foote-stoole to Gods feete, and how the same God could hold his feete of the one part and the other, and many heads round about, seeing that hee is in all partes of the world, which were a vaine and ridiculous thing. Wee must therefore conclude, that in the holy scriptures we ought not to follow the letter which killes, but the spirit which quickneth, as saith S. Paul. 2 Corint. ii.

Chap. v.—*Of the fashion and forme of Heaven, at the new-found world.*

Lib. i.

Many in Europe demaund of what forme and fashion Heaven is in the Southerne parts, for that there is no certaintie found in ancient bookes, who, although they graunt there is a Heaven on this other part of the world, yet come they not to any knowledge of the forme thereof, although in trueth they make mention of a goodly great Starre seene in those partes, which they call *Canopus*. Those which of late dayes have sayled into these parts, have accustomed to write strange things of this heaven; that it is very bright, having many goodly starres: and in effect, thinges which come farre are commonly described with encrease. But it seemes contrary vnto me, holding it for certaine, that in our Region of the North, there is a greater nomber and bigger Starres: finding no starres in these partes, which exceed the Fisher or the Chariot in bignesse. It is true, that the Crosse in these partes is very fayre and pleasing to behold: wee call the Crosse, foure notable and apparant starres, which make the forme of a crosse, set equally and with proportion. The ignorant suppose this Crosse to be the southerne Pole, for that they see the Navigators take their heigth thereby, as we are accustomed to doe by the North starre. But they are deceyved, and the reason why Saylers doe it in this sorte, is for that in the South parts there is no fixed starre that markes the Pole, as the North starre doth to our Pole. And therefore they take their heigth by the starre at the foot of the Crosse, distant from the true and fixed Pole Antarticke thirtie degrees, as the North starre is distant from the Pole Articke three degrees or little more. And so it is more difficult to take the heigth in those parts, for that the sayd starre at the foote of the Crosse must bee

Plin., lib. vi, cap. 22.

right, the which chanceth but in one houre of the night; which is in divers seasons of the yeere in divers houres, and often times it appeareth not in the whole night, so as it is very difficult to take the heigth. And therefore the most expert Pilots regard not the Crosse, taking the heigth of the Sunne by the Astrolabe, by which they know in what height they are: wherein commonly the Portugals are more expert, as a Nation that hath more discourse in the Arte of Navigation then any other. There are also other starres in these southerne parts, which in some sort resemble those of the North. That which they call the Milken way, is larger and more resplendent in the south parts, appearing therein those admirable blacke spots, whereof wee have made mention. As for other particularities, let others speake of them with greater curiositie, and let this which wee have sayd suffice for this time.

Via lactea.

CHAP. VI.—*That there is Land and Sea Under the two Poles.*

It is no smal labour to have vnfolded this doubt with this knowledge and resolution, that there is a Heaven in these parts of the Indies, which doth cover them as in Europe, Asia, and Affricke. And this point serveth often against many Spaniards, who beeing here, sigh for Spaine, having no discourse but of their countrie. They wonder, yea, they grow discontented with vs, imagining that we have forgotten and make small accompt of our native soyle. To whom we answere, that the desire to returne into Spaine doth nothing trouble vs, being as neere vnto Heaven at Peru, as in Spaine: as saint Ierome saith well, writing unto Paulinus; That the gates of Heaven are as neere vnto Brittanie, as to Ierusalem. But although the Heaven doth compasse in the world of all parts, yet must

Lib. i.

we not imagine that there is land necessarily on all parts of the world. For being so, that the two elements of earth and water make one globe or bowle, according to the opinion of the most renowmed ancient authors, (as Plutarch testifieth) and as it is prooved by most certaine demonstrations, wee may coniecture, that the sea doth occupie all this part, which is vnder the Antartike or southerne Pole, so as there should not remaine any place in these partes for the earth, the which saint Augustine doth very learnedly hold against them that maintaine the Antipodes, saying, that although it bee prooved, and wee beleeve that the worlde is round like to a bowle, wee may not therefore inferre, that in this other part of the worlde, the earth is vncovered, and without water. Without doubt, saint Augustine speakes well vpon this point; and as the contrary is not prooved, so doth it not follow, that there is any land discovered at the Antarticke Pole. The which experience hath now plainely taught vs, for although the greatest part of the world vnder the Pole Antarticke be sea, yet is it not altogether, but there is likewise land, so as in all parts of the world, the earth and water imbrace one another, which truely is a thing to make vs admire and glorifie the Arte of the soveraigne Creator. We know then by the holy Scripture, that in the beginning of the worlde, the waters were gathered together in one place, so as the earth remayned vncovered. Moreover, the same holy Writte doth teach vs, that these gatherings together of the water were called Sea; and as there be many, so of necessitie there must be many Seas. And this diversitie of seas is not onely in the Mediterranean Sea, whereas one is called Euxine, another the Caspian, an other the Erythrean or redde Sea, another the Persian, an other of Italie, and so many others. But also in the great Ocean, which the holy Scripture doth vsually call a gulph: although really and in trueth it be but a Sea, yet in many and divers

Plut. li. de placitis phil. cap. 9 and 11.

Aug., lib. xvi, de civit., cap. 9.

Genes. i.

manners: as in respect of Peru and all America, the one is called the North Sea, the other the South; and at the East Indies, the one is called the Indian sea, the other that of China. And I have observed, as well by my owne navigation, as by the relation of others, that the Sea is never divided from the Lande above a thousand Leagues. And although the great Ocean stretcheth farre, yet doth it never passe this measure. I will not for all this affirme that wee sayle not above a thousand leagues in the Ocean, which were repugnant to trueth, being well knowne that the shippes of Portugal have sailed foure times as much and more, and that the whole world may bee compassed about by sea, as wee have seene in these dayes, without any further doubt. But I say and affirme, that of that which is at this day discovered, there is no land distant from any other firme land, by direct line, or from some Islands neere vnto it above a thousand leagues; and so betwixt two firme lands there is no greater distance of sea, accompting from the neerest parts of both the lands: for, from the ends of Europe or Affricke and their coastes, to the Canaries, the Isles of Açores, Cape Verd and others in the like degree, are not above three hundred leagues, or five hundred from the Mayne land. From the saide Ilands running along to the West Indies, there are scant nine hundred leagues, to the Ilands of saint Dominick, the Virgins, the Happy Ilandes and the rest; and the same Ilands runne along in order to the Ilandes of Barlovent[1] which are Cuba, Hispaniola, and Boriquen;[2] from the same Ilands vnto the Mayne land are scarce two or three hundred leagues, and in the neerest part farre lesse. The firme land runnes an infinite space; from Terra Florida to the land of Patagones, and on the other side of the South, from

[1] *Barlovento*, windward; and *sotavento*, leeward.

[2] Boriquen or Brieque Island, also called Crab's Island, is one of the Virgin Isles, two leagues from Porto Rico.

Lib. I.

the Straight of Magellan,[1] to the Cape of Mendoce,[2] there runnes a long Continent but not very large ;[3] for the largest is here in Peru,[4] which is distant from Brazil about a thousand leagues. In this South Sea, although they have not yet discovered the ende towards the West, yet of late they have found out the Ilands which they call Salomon,[5] the which are many and great, distant from Peru about eyght hundred leagues. And for that wee finde by observation, that whereas there bee many and great Ilandes, so there is some firme Land not farre off, I my selfe with many others doe beleeve that there is some firme land neere unto the Ilands of Salomon, the which doth answere vnto our America on the West part, and possibly might runne by the heigth of the South, to the Straightes of Magellan. Some hold that Nova Guinea is firme Land, and some learned men describe it neere to the Ilands of Salomon ; so as it is likely, a good parte of the world is not yet discovered, seeing at this day our men sayle in the South Sea vnto China and the Philippines; and wee say, that to go from Peru to those parts, they passe a greater Sea, then in going from Spaine to Peru. Moreover, wee know, that by that famous Straight of Magellan these two Seas doe ioyne and continue one with an other (I say the South sea with that of the North) by that part of the Antarticke Pole, which is in fiftie one degrees of altitude. But it is a great question, wherein many have busied themselves, whether these two Seas ioyne together in the North part; but I have not heard that any vnto this day could attayne vnto this point: but by certaine likelihoods and coniectures, some affirme there is an other Straight vnder the North, opposite

[1] "Magallanes."

[2] Cape Mendocino, on the coast of California.

[3] "No muy ancha", not very wide.

[4] "Aqui en esta parte del Peru."

[5] Discovered by Alvaro Mendaña in 1567.

to that of Magellan. But it sufficeth for our subiect, to knowe that there is a firme Land on this Southerne part, as bigge as all Europe, Asia, and Affricke; that vnder both the Poles we finde both land and sea, one imbracing an other. Whereof the Ancients might stand in doubt, and contradict it for want of experience. LIB. I.

CHAP. VII.—*To confute the opinion of Lactantius, who holdes there be no Antipodes.*

Seeing it is manifest that there is firme land vpon the South part or Pole Antartike, wee must now see if it be inhabited; the which hath bene a matter very disputable in former times. Lactantius Firmian and S. Augustine mocke at such as hold there be any Antipodes, which is as much to say, as men marching with their feete opposite to ours. But although these two authors agree in theis ieasts,[1] yet doe they differ much in their reasons and opinions, as they were of very divers spirits and iudgements. Lactantius followes the vulgar, seeming ridiculous vnto him that the heaven should be round, and that the earth should bee compassed in the midst thereof, like vnto a ball, whereof he writes in these tearmes: "What reason is there for some to affirme that there are Antipodes, whose steppes are opposite to ours? Is it possible that any should bee so grosse and simple as to beleeve there were a people or nation marching with their feete upwardes, and their heades downwardes, and that thinges which are placed heere of one sort, are in that other part hanging topsie turvie; that trees and corne growe downwards, and that raine, snow, and haile, fall from the earth upward." Then, after some other discourse, the same Lactantius vseth these words: "The imagination and conceit which some haue had, sup-

Lact., lib. vii, inst. divin., cap. 23.

Aug., lib. xvi de Suitale, c. 9.

[1] "Cosa de burla."

Lib. I. posing the heaven to be round, hath bene the cause to invent these Antipodes hanging in the aire. So as I knowe not what to say of such Philosophers, whoe having once erred, continue still obstinately in their opinions defending one another." But whatsoever he saieth, wee that live now at Peru, and inhabite that part of the world which is opposite to Asia and their Antipodes (as the Cosmographers do teach vs) finde not our selves to bee hanging in the aire, our heades downward, and our feete on high. Truly it is strange to consider that the spirit and vnderstanding of man cannot attaine vnto the trueth, without the vse of imagination; and on the other part, it were impossible but he should erre and be deceived, if hee should wholy forbeare it. We cannot comprehend the heaven to be round as it is, and the earth to bee in the middest of it, without imagination. But if this imagination were not controuled and reformed by reason, in the end wee should be deceiued; whereby we may certainely conclude, that in our soules there is a certaine light of heaven, whereby wee see and iudge of the interior formes which present themselves vnto vs, and by the same we alow of, or reiect that which imagination doth offer vnto vs. Hereby we see that the rationall soule is above all corporall powers: and as the force and eternall vigour of truth doth rule in the most eminent part of man: yea, we plainely see that this pure light is participant and proceedes from that first great light, that whoso knoweth not this, or doubteth thereof, we may well say that he is ignorant, or doubtes whether he be a man or no. So, if we shall demaund of our imagination what it thinkes of the roundnes of heaven, without doubt she will answere vs as Lactantius doth, That if the heaven were round, the Sun and starres should fall, when as they move and change their places, rising towards the South. Even so, if the earth did hang in the ayre, those which inhabite the other part, should go with their feete vpwards, and their heades downward, and

the raine which falles from above, should mount vpward; with many other ridiculous deformities. But if we consult with the force of reason, she will make small accoumpt of all these vaine imaginations, nor suffer vs to beleeve them no more than a foolish dreame. But Reason will answer with this her integritie and gravitie, that it were a very grosse error, to imagine the whole world to be like vnto a house, placing the earth for the foundation, and the heaven for the covering. Moreover she will say, that as in all creatures the head is the highest part and most elevated, although all creatures have not heades placed in one and the same situation, some being in the highest part, as man, some athwart, as sheepe, others in the middest, as spiders, even so the heaven, in what part soeuer it be, remaines above, and the earth likewise in what part soever, remaines vnderneath. Our imagination therefore is grounded vpon time and place, the which she cannot comprehend nor conceive in generall, but in particular. It followeth, that when wee shall raise it to the consideration of things which exceed the time and place which are knowne vnto her, then presently she shrinkes and cannot subsist, if reason doth not support her. In like sort wee see, vpon the discourse of the creation of the worlde, our imagination straies to seeke out a time before the creation thereof, and to build the world; she discribes a place, but shee comes not to consider that the worlde might bee made after another fashion. Notwithstanding, reason doth teach vs, that there was no time before there was a motion, whereof time is the measure, neyther was there any place before the vniversall, which comprehendes within it all place. Wherein the excellent Philosopher Aristotle doth plainely satisfie, and in a few wordes, that argument made against the place of the earth, helping himselfe with our vse of imagination, when hee sayeth, and with trueth, "That in the world the same place of the earth is in the

Arist., i, de Cel., ca. 3.

Lib. I.

midst and beneath, and the more a thing is in the middest, the more it is vnderneath". The which answer being produced by Lactantius Firmian, yet hee doth passe it over without confutation, by reason, saying that he cannot stay theron, and omitte the handling of other matters.

Chap. VIII.—*The reason why S. Augustine denied the Antipodes.*

The reason which moved S. Augustine to deny the Antipodes was other then that formerly alleadged, being of a higher iudgement, for the reson before mentioned, that the Antipodes should go vpwards, is confuted by the same Doctor in his booke of sermons in these words, "The ancients hold that the earth of all parts is beneath, and the heaven above, by reason whereof the Antipodes, which they say go opposite vnto vs, have like vnto vs the heaven above their heads." Seeing then S. Augustine hath confessed this to bee conformable to good Philosophie, what reason shall we say did move so learned and excellent a man to follow the contrary opinion. Doubtlesse he drew the motive and cause from the bowels of divinitie, whereby the holie Writ doth teach vs that all mankinde doth come from the first man Adam; and to say that men could passe to that new world, crossing the great Ocean, were vncredible, and a meere lye. And in truth if the successe an experience of what we have seene in these ages had not satisfied vs in this point, wee had yet held this reason to bee good. And although we know this reason neither to be pertinent nor true, yet will we make answere therevnto, shewing in what sort, and by what meanes, the first linage of men might passe thither; and howe and by what meanes they came to people and inhabite the Indies. And for that wee meane heereafter to intreat briefly of this subiect, it shall

Aug., lib. Casegoriacum, c. 10, in tome 1.

be fit now to vnderstand what the holy Doctor Augustine disputes uppon this matter in his bookes of the cittie of God, "It is no point that we ought to beleeve, as some affirme, that there are Antipodes, that is to say, men which inhabite that other part of the earth, in whose region the Sunne riseth when it sets with vs, and that their steppes be opposite and contrarie to ours, seeing they affirme not this by any certaine revelation which they have, but onely by a Philosophicall discourse they make, whereby they conclude that the earth being in the middest of the world, invironed of all parts and covered equallie with the heaven, of necessitie that must be in the lowest place which is in the midst of the world." Afterwards hee continues in these words, "The holie Scripture doth not erre, neither is deceived in anie sort; the truth whereof is well approved in that which it propoundeth of things which are passed, for as much as that which hath bene fore-told, hath succeeded in every point, as we see; And it is a thing void of all sense to say that men could passe from this continent to the new found world and cut through the Vast Ocean, seeing it were impossible for men to passe into those parts any other way, being most certain that al men descēd from the first man." Wherein we see that all the difficultie S. Augustine hath found was nothing else but the incomparable greatnes of this vast Ocean. Gregorie Nazianzene was of the same opinion, assuring, as a matter without any doubt, that it was not possible to saile beyond the Straights of Gibraltar; and vpon this subiect he writes in an Epistle of his, "I agree well with the saying of Pindarus, 'That past Cadiz, that Sea is not nauigable'." And hee himselfe in the funerall Sermon he made for saint Basil saith, "It was not tollerable for anie one sailing on the Sea to passe the Straight of Gibraltar." And it is true, that this place of Pindarus, where he saith, "That it is not lawfull, neyther for wise men nor fooles, to know what is beyond the

Lib. I.

Lib. xvi, cap. 9.

Nazian., op. st. xxvii, ad Postumic-num.

Lib. I. Straight of Gibraltar", hath beene taken for a Proverbe. Thus we see by the beginning of this Proverbe, how the Ancients were obstinately setled in this opinion; as also by the bookes of Poets, Historiographers, and ancient Cosmographers, that the end and bounds of the earth were set at Cadiz in Spaine, where they plant the pillars of Hercules; there they set the limits of the Romane Empire, and there they describe the boundes of the world. And not onely prophane writers speake in this sort, but also the holy Scripture, to apply it selfe to our phrase saith, "That the edict of Augustus Cæsar was published, to the end that all the world should be taxed; and of Alexander the great, that he stretched forth his Empire even to the end and vttermost bounds of the earth. And in another place they say, that the Gospell did flourish and increase through the vniversall world. For the holy Scripture by an vsuall phrase, calleth all the worlde, that which is the greatest part thereof, and was at that time discovered and knowne. And the Ancients were ignorant that the East Indian Sea, and that of the West were navigable, wherin they have generally agreed. By reason whereof, Plinie writes as a a certaine trueth, that the seas which are betwixt two lands take from vs a iust moitie of the habitable earth. For, saith he, we cannot passe thither, neyther they come hither. Finally, Tullie, Macrobius, Pomponius Mela, and the ancient Writers, hold the same opinion.

Chap ix.—*Of Aristotles opinion touching the new Worlde, and what abused him to make him deny it.*

Besides all the former reasons there was yet an other, which mooved the Ancients to beleeve it to be impossible for men to passe to this new world; the which they held, for that besides the vastnesse of the great Ocean, the heate of

that Region, which they call the burning Zone, was so excessive, as it would not suffer any man, how venturous or laborious so ever, to passe by sea or land from one Pole to an other. For although these Philosophers have themselves affirmed that the earth was round (as in effect it is), and that vnder the 2 Poles there was habitable land, yet could they not conceyve that the Region, containing all that lyeth betwixt the two Tropickes (which is the greatest of the five Zones or Regions by the which the Cosmographers and Astrologers divide the Worlde) might be inhabited by man. The reason they give to maintaine this Zone to be inhabitable was, for the heat of the Sunne, which makes his course directly over this Region, and approcheth so neere as it is set on fire, and so by consequence causeth a want of waters and pastures. Aristotle was of this opinion, who although he were a great Philosopher, yet was hee deceyved in this poynt; for the cleering whereof it shall be good to observe his reasons, and to note wherein he hath discoursed well, and wherein he hath erred. This Philosopher makes a question of the Meridionall or Southerne winde, whether wee should beleeve it takes his beginning from the South, or from the other Pole contrary to the North, and writes in these termes: "Reason teacheth vs that the latitude and largenesse of the habitable earth hath her boundes and limits, and yet all this habitable earth cannot bee vnited and ioyned one to the other, by reason the middle Region is so intemperate. For it is certain that in her longitude, which is from East to West, there is no immoderate cold nor heate, but in her latitude and heighth, which is from the Pole to the Equinoctiall Line. So as we may well passe the whole earth in her longitude, if the greatnesse of the Sea, which ioynes lands together, were no hinderance." Hitherto there is no contradicting of Aristotle, who hath great reason to affirme that the earth in her longitude, which is from East to West,

Arist., ii, Meta, cap. 5.

Lib. i. runnes more equaly and is more proper for the life and habitation of man then in her latitude from North to South. The which is true, not onely for this foresaid reason of Aristotle, that there is alwayes one temperature of the Heavens from East to West, being equally distant both from the Northerne colde and the Southerne heate. But also for an other reason, for that travelling alwayes in longitude we see the dayes and nights succeed one another by course, the which falleth not out going in her latitude; for of necessitie wee must come to that Region vnder the Pole, whereas there is continuall night for sixe Moneths, a very inconvenient thing for the life of man. The Philosopher passeth on further, reprooving the Geographers, which described the earth in his time, and saith thus, "Wee may discerne the trueth of that which I have sayd, by the passages which may be made by land, and the navigations by sea, for there is a great difference betwixt the longitude and the latitude, for the distance from the pillars of Hercules at the Straight of Gibraltar, vnto the East Indies, exceeds the proportion of about five to three, the passage which is from Ethiopia to the lake of Meotis in the farthest confines of Scythia, the which is confirmed by the account of iourneys by land, and by sayling, as we do now know by experience; we have also knowledge of the habitable earth, even vnto those partes which are inhabitable." And truely in this point wee must pardon Aristotle, seeing that in his time they had not discovered beyond the first Ethiopia, called the exterior, ioyning to Arabia and Affricke; the other Ethiopia being wholy vnknowne in his age. Yea, all that great Land which we now call the Land of Prete Ian, neyther had they any knowledge of the rest that lyes vnder the Equinoctiall, and runnes beyond the Tropicke of Capricorne vnto the Cape of good Hope, so famous and well knowne by the navigation of Portugals; so as if wee measure the Land from this Cape vnto Scythia

and Tartaria, there is no doubt but this distance and latitude will proove as great as the longitude, which is from Gibraltar vnto the East Indies. It is certaine the Ancients had no knowledge of the springs of Nilus, nor of the ende of Ethiopia, and therefore Lucan reprooves the curiositie of Iulius Cæsar, searching out the springs of Nilus in these verses : Lucan, x. Pharsal.

"O Romaine, what availes thee so much travell,[1]
In search of Niles first source thy selfe to gravell."

And the same Poet speaking to Nile sayth :

"Since thy first source is yet so unrevealed,
Nile, what thou art, is from the world concealed."[2]

But by the holy scripture we may conceive that this land is habitable, for if it were not, the Prophet Sophonias would not say (speaking of these nations called to the Gospell), "The children of my dispersed (so he calleth the Apostles) shall bring me presents from beyond the bancks of Ethiopia". Yet, as I have said, there is reason to pardon the Philosopher who beleeved the writers and Cosmographers of his time. Let vs continue and examine what followes of the same Aristotle. "One part of the world (saith he) which lieth towards the North, beyond the temperate zone, is inhabitable for the exceeding cold; the other part vpon the South is likewise inhabitable beyond the Tropicke for the extreame heate. But the partes of the world lying beyond India on the one side, and the pillars of Hercules on the other, without doubt cannot bee ioyned and continued one with the other; so as all the habitable earth is not conteined in one continent by reason of the sea which divides it." In this last point he speakes truth. Then hee continues touching the other partes of Soph., ca. iii.

[1] "Que tienes tu Romano que ponerte
A inquirir de Nilo el nacimiento?"

[2] "Pues es tu nacimiento tan oculto
Que ignora el mundo todo cuyo seas."

Lib. I.

the world, saying, "It is necessarie the earth should have the same proportion with the Pole Antarticke, as this our part which is habitable hath with the North; and there is no doubt but in that other world all things should be ordred as in ours, especially in the growing and order of the winds." And having alleaged other reasons to no purpose, he concludes, saying, "We must confesse of necessity that the Southerne wind is that which blowes and comes from the burning zone, the which being so neere the sunne wantes water and pastures". This is Aristotles opinion, and in truth mans coniecture can hardly passe any farther. So as I do often consider, with a Christian contemplation, how weake the Philosophie of the wise of this world hath beene in the search of divine things, seeing in humaine things (wherein they seeme so well read) they often erre. Aristotle holds that the habitable earth of the Pole Antartike in longitude from East to West is very great, and in latitude from the Pole Antartike to the Equinoctiall is very small; the which is so contrary to the truth, that in a maner all the habitation on this side the Pole Antartike is in latitude (I meane from the Pole to the line), and in longitude from East to West it is so small, as the latitude exceede it three partes or more. In his other opinion he affirmes, that the middle region is inhabitable, being vnder the burning zone, burnt up by the excessive heate caused by the neereness of the sunne, and by this reason hath neither waters nor pastures. The which is in like sort contrary; for the greatest part of this new world is scituated betwixt the two Tropickes vnder the burning zone, and yet it is found very well peopled and inhabited by men and other sortes of creatures, being a region of all the world the most fruitfull of waters and pastures, and very temperate in the greatest part, which the will of God hath so appointed, to shew that even in naturall things he hath confounded the wisedome of this world. To conclude, wee

must beleeve that the burning zone is well inhabited, although the auncients have held it impossible. But the other zone or region, which lyeth betwixt the burning zone and that of the Pole Antartike, although it bee in a climate more commodious for the life of man, yet it is smally peopled and inhabited, seeing wee know no other dwelling in it but the Kingdom of Chile and a small portion ioyning to the Cape of good Hope. The rest is possessed by the Ocean. Although many be of opinion, the which I likewise hold, that there is much more land not yet discovered, the which should be firme land opposite to the Kingdom of Chile, which runnes beyond the circle or Tropicke of Capricorne. And if there be any, without doubt it is a land of an excellent temper, being in the midst of two extreames, and scituate in the same climate with the best regions in Europe. And in this regard Aristotles coniecture was good. But speaking of what is discovered at this day in this zone, it is little in regard of the large countries inhabited vnder the burning zone. Lib. i.

Chap. x.—*That Plinie and the auncients held the same opinion with Aristotle.*

This opinion of Aristotles, hath bene held by Plinie, who saith thus: "The temperature of the middle region of the world, where the sunne continually runnes his course, is scorched and burnt vp as with a neere fire." Ioyning to the same region, there are two others of eyther side, which (lying betwixt the heat of this burning zone and the cruell cold of the other two extreams) are very temperate, and can have no communication one with another, by reason of the excessive heate of the heaven, which hath bene the opinion of the Ancients, generally described by the Poet in these verses: Plin., lib. i, cap. 61.

Lib. i.

Virgil in Georg.

"Heavens circuit is of fiue zones, one whereof,[1]
Which still the sunne burnes, makes the earth below
With flames intempestiue red hotte to glow."

And the same Poet in another place,

Eneid.

"Heare this, if any harbour in that seate[2]
Whose quarter vnder that large zone is set
Amidst foure others by the sunne enlightned."

And another Poet speakes more plainely,

Ovid, Meta.

"As many regions are there on the ground,
As are in heaven, wherein fiue parts are found,
Whereof the midst, through heate raisd from the rayes
Of scorching sunne, inhabitable staies."

The Auncients have grounded their generall opinion vpon one reason, which seemed to them certaine and not to be confuted; for finding that the more a region drew neere vnto the South, the hotter it was; the proofe whereof was so infallible in those regions, as by the same reason in Italie, Apulia is hotter then Tuscane, and in Spaine Andaluzia then Biscaie. A thing so apparent, that although there bee but eight degrees difference or lesse betwixt the one and the other, yet do wee finde the one extreame hotte, and the other very colde, whereby they did inferre that the region so neere the South, having the sunne so directly for zenith, must of necessity bee continually scorched with heate. They did likewise see, that the divers seasons of the yeere, as the Spring, Summer, Autumne, and Winter, were caused by the neerenes and distance of the sunne, finding also that although they were farre from the Tropicke, by which the sunne doth passe in

[1] "Quinque tenent cœlum zonæ: quarum una corusco
Semper sole rubens, et torrida semper ab igni."
Georg., lib. i, l. 233.

[2] "Audiit, et si quem tellus extrema refuso
Submovet Oceano, et si quem extenta plagarum
Quatuor in medio dirimit plaga solis iniqui."
Æneid, lib. vii, l. 225.

summer, yet when it approached neere vnto them, at the same season they felt great heate. Whereby they did coniecture that if they had had the sunne so neere vnto them as to go directly over their heads, the heate would have bene so insupportable, as it would burne and consume men with the vehemency thereof. The same reason moved the Auncients to thinke that the middle region was not habitable, and therefore they called it the burning zone. And in truth, if visible experience did not vnfold this doubt, we should yet confesse that this reason were very peremptorie and Mathematicall;[1] whereby we may see how weake our vnderstanding is, to comprehend these naturall things. But wee may say, it is fallen out to the great good and happiness of our age, to have the knowledge of these two great wonders, that is, to know how easily we may saile through the great Ocean, and that vnder the burning zone men inioy a very temperate heaven, the which the Auncients could never beleeve. Of the last of these two wonders, touching the qualitie and habitation of the burning zone, by the grace of God we will discourse amply thereof in the next book. I thinke it therefore fit in this booke to treat of the maner of sailing through the Ocean, for that it imports vs much for the subiect of this worke. But before wee come to this point, it shall be good to shew what the Auncients thought of these new men, whome we call Indians.

CHAP. XI.—*That in ancient Bookes we finde some knowledge of this newe world.*

Let vs returne to that which hath beene formerly spoken. Wee must necessarily conclude that the Ancients did beleeve that eyther there were no men beyond the Tropicke

[1] "Que era razon concluyente y Matematica."

Lib. 1.

Plutarch, iii, de placitus phil., cap. 11.

of Cancer, as S. Augustine and Lactantius doe affirme, or if there were any, at the least they did not inhabite betwixt the two Tropicks, as Aristotle and Plinie have maintained, and before them the Philosopher Parmenides, the contrarie whereof is before sufficiently prooved, both for the one and the other. But many through curiositie may demaund, if the Ancients had no knowledge of this trueth, which to vs is now so apparent; seeing that in trueth it seemeth very strange that this newe worlde which is so spacious as we doe visibly see it, should be hidden from the Ancients by so many ages. But some at this day, seeking to obscure the felicitie of this age and the Glory of our Nation, strive to proove that the new-found world was knowne to the Ancients. And in trueth wee cannot deny but there was some apparency.[1] S. Ierome writing vpon the Epistle to the Ephesians, sayth: "We seeke with reason what the Apostle meaneth in these wordes, where he saith: you have walked for a season according to the course of this world, whether he would have vs to vnderstand that there is an other world, which neither is nor depends of this world; but other worldes, whereof Clement writes in his Epistle, the Ocean and the worldes which are beyond the Ocean". These are the wordes of S. Ierome, but in trueth I cannot finde this Epistle of S. Clement cited by S. Ierome, yet I beleeve vndoubtedly, that S. Clement hath written it, seeing S. Ierome maketh mention thereof. And with reason saint Clement saith, that beyond the Ocean there is an other worlde, yea, many worldes, as in trueth there is; seeing there is so great distance from one newe worlde to an other new world (I meane from Peru and the West Indies, to China and the East Indies). Moreover, Plinie, who hath beene so curious a searcher out of strange things, reportes in his naturall Historie, that Hannon, a Captaine of the Carthaginians, sayled through the Ocean, from the

S. Ierom., super, cap. 1, ad Ephes.

[1] "Y realmente no se puede negar, que aya desto algunos rastros."

Straight of Gibraltar, coasting alongst the land, even vnto the confines of Arabia, and that hee left this his Navigation in writing. If it bee as Plinie writes, it followes that Hannon sayled as farre as the Portugals do at this day, passing twice vnder the Equinoctiall, which is a feare-full thing. And the same Plinie reports of Cornelius Nepos a very grave Authour, who saith, that the same course hath beene sayled by an other man, called Eudoxus, but by contrary wayes, for this Eudoxus, flying from the King of Latyros, passed by the redde sea into the Ocean; and turning backe, came to the Straight of Gibraltar, the which Cornelius Nepos affirmes to have happened in his time. And also other grave Authors do write, that a ship of Carthage driven by force of winde into the Ocean, came to a Land which vntill then was vnknowne; and returning to Carthage, kindled a great desire in the Citizens to discover and people this land; the which the Senate perceyving, did forbid this navigation by a rigorous decree, fearing that with the desire of new lands they should leave to love their owne Countrie. By all this wee may gather that the Ancients had some knowledge of the new world, yet shall you hardly finde in the bookes of Ancient writers any thing written of our America and all the West Indies; but of the East Indies, I say, there is sufficient testimonie, not only of that on the other side, but also of that on this side, which then was farthest off, going thither by a contrary way to that at this day. Is it not easie to find Malaca in ancient bookes, which they called the golden Chersonese; the Cape of Comorin, which was called the Promontorie of Cori, and that great and famous Iland of Sumatra, so well knowne by the ancient name of Taprobana. What shall wee say of the two Ethiopias, the Brachmanes, and that great Land of the Chinas? Who doubtes, but there was often mention made thereof in ancient bookes; But of the West Indies, we find not in Plinie, that in this navigation

Plin., lib. ii, c. 67.

Plin., lib. vi, cap. 32.

Lib. I.

they passed the Ilands of the Canaries, which he calleth Fortunate; the principal whereof is sayd to be called Canarie, for the multitude of dogs which are in it. But there is scarce any mention in ancient books of the voyages which are made at this day beyond the Canaries, by the Gulph which with reason they call great. Yet many hold opinion that Seneca the Tragedian did prophecie of the West Indies, in his Tragedie of Medea, which translated, saith thus:

Senec. in Med. Act., ii, in sin.

"An age shall come, ere ages ende,
Blessedly strange and strangely blest,
When our Sea farre and neere or'prest,
His shoare shall farther yet extend.

"Descryed then shall a large Land be,
By this profound Seas navigation,
An other World, an other nation,
All men shall then discovered see.

"Thule accounted heretofore
The worldes extreme, the Northerne bound,
Shall be when Southwest parts be found,
A neerer Isle, a neighbour shoare."

This, Seneca reports in these verses; and we cannot wel deny, but (vnderstanding it litterally) it is very true; for if we reckon the many yeeres he speakes of, beginning from the time of the Tragedian, it is above a thousand and foure hundred yeeres past; and if it were from the time of Medea, it is above two thousand yeeres, the which we see plainely now accomplished; seeing the passage of the Ocean so long time hidden, hath beene found out, and that they have discovered a great land and a new world inhabited, more spatious then all the Continent of Europe and Asia. But therein may a question with reason be made, whether Seneca spake this by divination, or poetically and by chance. And to speeke my opinion, I beleeve hee did divine, after the manner of wise men and well advised; for that in his time they vndertooke newe voyages and navigations by sea,

hee knew well, like a philosopher, that there was an other land contrary and opposite vnto vs, which they call Antichthon.[1] And by this ground he might conceyve that the industrie and courage of man might in the ende passe the Ocean, and discover new lands and another world, for that in Senecas time they had knowledge of the Voyage which Plinie speaketh of, whereby they passed the great Ocean. The which seemes to bee the motive of Senecas prophecie, as he giveth vs to vnderstand by these former verses, after the which having described the carefull life of the Ancients, free from malice, he followeth thus:

"Now is it not as earst it was,
For whether the Ocean will or nill,
He traverst is by hardy will:
Which pastime makes time so to passe."

And a little after he saith thus:

"Now every boate dares swimme, and sport
On surging Seas, fearing no wracke;
Passengers seeking what they lacke,
So long a voyage thinke but short.

"Nothing is nowe more to discover,
No place is now left to surprise,
Townes now that for defence devise,
With new fortifications cover.

"All in the world turn'd round about,
No thing in place as 'twas enured,
Nothing vnseene, nothing assured
This Circle universe throughout.

"The Indian, whom at home heate fries,
Drinkes of Araxis waters cold:
The Persian, rich in gems and gold,
Wash in the Rhine and Elbe likewise."

Seneca did coniecture this by the great courage of men, as that which shall happen last, saying, It shall fall out in the latter age, etc., as hath bin before mentioned.

[1] Antictona.

Chap. xii.—*Of the opinion which Plato held of the West Indies.*

Lib. i.

If any one hath treated more particularly of the west Indies, the honor belongs to Plato, who in his Timœus saith thus: "In those dayes they could not sayle this Gulph" (meaning the Atlantike Sea, which is the Ocean which meetes at the Straight of Gibraltar) "for that the passage was stopped at the mouth of the pillars of Hercules" (which is the same Straight of Gibraltar) "and this Iland was in those dayes ioyned to the foresaid mouth, and was of that bignesse as it exceeded all Asia and Affricke together; and then was there a passage to goe from these Ilands to others, and from those other Ilandes, they went to the firme Land, the which was neere invironed with the very Sea". This is reported by Critias in Plato. And such as beleeve that this narration of Plato is a true Historie, delivered in these termes, say that this great Atlanticke Iland, the which did exceed both Affricke and Asia in greatnesse, did then comprehend the greatest part of the Ocean called Atlantike, which the Spaniards nowe sayle in; and that those other Ilands, which, he sayde, were neere vnto this great one, are those which wee now call the Ilands of Barlovento;[1] that is, Cuba, Hispaniola, S. Iohn de Port ricco,[2] Iamaica, and other Ilands of that Countrie; and that the maine Land whereof hee maketh mention, is the same wee now call Tierra Firme, that is, Peru and America; and that Sea, which he sayth is adioyning to the Tierra Firme, is the South Sea, the which he calleth the very Sea, for that in comparison of her greatnesse, all other Seas, both Mediterranean, yea and the Atlantike Sea, are small in regard thereof. Hereby in trueth they give a cunning and wittie interpretation to these words of Plato. But whether this interpretation should be held for true or not, I am resolved to declare in another place.

[1] The Windward Islands. [2] Porto Rico.

CHAP. XIII.—*That some have held opinion that in places of holy Scripture, whereas they speake of Ophir, is to be vnderstood of our Peru.*

Some hold opinion that mention is made of the West Indies in the holy scripture, taking the region of Peru for that Ophir which they make so famous. Roberto Stefano, or to say more truely Francisco Batablo, a man well seene in the Hebrew tong (as I have heard our master report, who was his disciple) saith in his annotations vpon the 9 chapter of the 3 booke of Kings, that the Iland of Hispaniola which Christopher Colombus found out, was that of Ophir, from whence Solomon caused to bee brought foure hundred and twentie or foure hundred and 50 talents of most fine and pure golde, for that the golde of Cibao which our men bring from Hispaniola, is of the same fashion and qualitie. And there are many others which affirme that our Peru is Ophir, deriving one name from another, who beleeve that when as the booke of Paralipomenon[1] was written, they called it Peru, grounding it vpon that which the holy scripture saith, that they brought from Ophir pure gold, precious stones, and wood which was rare and goodly—which things abound in Peru, as they say. But in my opinion it is farre from the truth, that Peru should be Ophir so famous in the Bible. For although in this Peru there be good store of gold, yet is there not yet such aboundance as it may be equalled with the fame of the riches that was in auncient time at the East Indies. I finde not that in Peru there are such precious stones, or such exquisite woods, as the like have not been seene at Ierusalem. For although there be exquisite Emeralds, and some hard trees of Aromaticall wood, yet do I not finde any thing of so great commendation as the scripture giueth vnto Ophir. Moreover it seemes not

Lib. I.

In., iii, lib. Reg., cap. 9.

Arias Montanus in apparatu in Phaeleg., ca. 9.

2 Paralip., ix. 3 Reg. x.

2 Para., viii. 4 Reg., xxii. 3 Reg., ix.

[1] Chronicles.

Lib. I.

likely that Solomon would leave the East Indies, most rich and plentifull, to send his fleetes to this farther land, whether if they had come so often, as it is written, we had surely found more signes and testimonies thereof. Moreover the Etimologie of the name of Ophir, and the change or reduction thereof to Peru, seemes to me of small consideration, being most certaine that the name of Peru is not very auncient, nor common to all that countrie.[1] It hath beene vsuall in the discoverie of the new world, to give names to lands and portes of the sea according to the occasions presented at their ariuall; and I beleeve that the name of Peru hath bene so found out and put in practice; for we find heere that the name hath bene given to all the countrie of Peru, by reason of a river so called by the inhabitants of the countrie, where the Spaniards arrived vpon their first discoverie. Whereby we maintaine that the Indians themselves bee ignorant, and do not vse this name and appellation to signifie their land. It seemeth moreover, the same Authors will say, that Sefer spoken of in the scripture, is that which we now call Andes, which are most high mountaines in Peru. But this resemblance of names and appellations is no sufficient proofe. If that were of force, we might as well say that Yucatan is Iectan mentioned in the holy scripture. Neither may we say that the names of Titus and Paul, which the Kings Inguas[2] of Peru do vse, come from the Romans or Christians, seeing it is too weake an argument to draw a conclusion of great matters. We see plainely that it is contrarie to the intention of the holy scriptures, which some have written, that Tharsis and Ophir were one Province or were reached in the same voyage, conferring the 22 chapter of the 4 booke of the Kings, with the

Iectan filius Heber, Gen. x.

Ieesan filius Abrahæ ex Cetura, Gen. xxv.

[1] See my translation of the *Royal Commentaries of Garcilasso de la Vega*, i, p. 27, for the derivation of the word Peru.

[2] Titu and Paullu are names of several Yncas. Titu means "august" or "magnanimous".—*Royal Comm.*, i, p. 145.

20 chapter of the second booke of Paralipomenon, for that in the booke of the Kings, it is said that Iosaphat prepared a fleete of shippes in Asiongaber to fetch golde at Ophir; and in Paralipomenon, it is written, that the same fleete was furnished to go vnto Tharsis. Whereby it may be supposed that in these fore-said bookes, where the scripture speakes of Tharsis and Ophir, that it meanes one thing. Some one may demaund what region or Province that Ophir was, whether Solomons fleete went with the Mariners of Hyram King of Tyre and Sidon to fetch gold. And whether King Iosaphats fleete, pretending to go, did suffer shipwracke and perish in Asiongaber, as the holy scripture doth testifie. In this I do willingly agree with the opinion of Iosephus, in his books of Antiquities, where he saith that it is a Province of the East Indies, the which was found by that Ophir the sonne of Iectan, whereof mention is made in the 10 of Genesis; and that Province did abound with most fine gold. Thereof it comes, they did so much extol the gold of Ophir or of Ophas, or as some wil say, this word of Obrise, is the same with Ophrise, for finding there seven sortes or kindes of gold, as S. Ierome reportes, that of Ophir was held for the most fine, as heere we esteeme the gold of Valdivia and Caravaya. The chiefest reason which moves me to thinke that Ophir is at the East Indies and not in the West, is, for that Solomons fleete could not come hither without passing the East Indies, all China, and a great part of the sea; being vnlikely they would passe all over the world to come thither for gold, that continent especially lying in that sort, as they could not come to the knowledge thereof by any voiage by land. And hereafter we wil shew that the Ancients had never knowledge in the arte of Navigation, without the which they could not runne so farre into the sea. Finally, in these matters (when as there appeares no certaine proofes, but onely light coniectures) we are not bound to beleeve but what we shall thinke good.

3 Reg., ix. 4 Reg., xx.

Gen. x.

Chap. xiv.—*What Tharsis and Ophir signifie in the holy Scripture.*

Lib. i.

If every mans coniecture and opinion may be allowed, for my part I hold that in the holy scripture these words of Tharsis and Ophir most commonly do not signifie any certaine place; but it is a word and signification generall to the Hebrewes, as in our vulgar tongue this word of Indies is generall vnto vs in our vsuall maner of speech; for wee meane by the Indies those rich countries which are farre off, and strange vnto vs. So we Spaniards do indifferently call Indies, the countries of Peru, Mexico, China, Malaca, and Bresil; and from what parts soever of these any letters come, wee say they bee from the Indies, which countries be farre distant and different one from another. Yet we cannot denie but that name of Indies is properly to be vnderstood of the East Indies. And for that in olde time they did speake of these Indies as of a countrie farre off, so likewise in the discoverie of other remote lands, they have given them the names of Indies, being distant from the rest, and held as the end of the world. Even so, in my iudgement, Tharsis in the holy scripture doth not signifie any certaine and determined place, but onely regions a farre off, and according to the vulgar opinion, very rich and strange; for that which Iosephus and some others would affirme, that Tharsis is Tarsus, according to the meaning of the scripture, in my opinion hath bene well refuted by S. Ierome, not onely for that these wordes are written with divers letters, the one with an aspiration, the other without; but also that many things are written of Tharsis, which cannot agree with Tarsus, a Citie in Cilicia. It is true, that in some places of the scripture, Tharsis is said to be in Cilicia, the which you shall find in the booke of Iudith, speaking of Holophernes, who having passed the

Ierom ad Marcel, in 3 tomo.

Iudith ii.

limits of Assyria, he came to the great mountaines of Ange, which perchance is Taurus, which hilles be on the left hand of Cilicia, and that he entred into all the Castells, where he assembled all his forces; having destroyed that famous Citie of Melithi, he ruined all the children of Tharsis and of Israell, which were ioyning vnto the desart, and those which were in the South, towards the land of Cellon, and from thence passed Euphrates; but as I have saide, that which is so written of Tharsis, cannot be applied to the Citie of Tarsus. Theodoret and some others, following the interpretation of the 70, in some places they set Tharsis in Affrike, saying it was the same Citie which was aunciently called Carthage, and is now the kingdome of Tunis; and they say that Ionas ment to go thether, when, as the scripture reports, that he fled from the Lord into Tharsis. Others pretend that Tharsis is a certaine countrie of the Indies, wherevnto it seemes that S. Ierome is inclined. I will not now decide these opinions, but I holde that in this case the scripture doth not alwaies signifie one region or certaine part of the world. It is true that the wise men or Kings that came to worship Christ were of the East; and the scripture saith they were of Saba, Esia, and Madian. And some learned men holde that they were of Ethiopia, Arabia, and Persia; and yet the Psalmist and the Church sings of them, "The Kings of Tharsis shall bring presents." Wee agree then with S. Ierome, that Tharsis is a word that hath many and divers significations in the scripture. Sometimes it signifies the Crisolite, or Iacinth stone, sometimes a certaine region of the Indies, sometimes the sea, which is of the colour of a Iacinth by the reverberation of the sunne. But the same Doctor doth with reason deny that Tharsis is any region of the Indies whither Ionas would fly, seeing that parting from Ioppa, it had beene impossible to saile vnto the Indies by that sea, for that Ioppa, which at this day wee call Iaffa, is no port of the red Sea, ioyning to the

Lib. i.

Lege Pline, lib. v, cap. 27.

Theodor in i Ioan.

Arias Montanus, ibid., and in alfabeto apparatus.

Ier. ad Marcel.

Psal. lx. Isaie xvi.

Lib. I.

East Indian Sea, but of the Mediterranean Sea, which hath no issue into the Indian. Whereby it doeth plainely appeare that the voyage which Solomons Fleet made, parting from Asiongaber (whereas the shippes of king Iosophat were lost), went by the redde Sea to Tharsis and Ophir, the which is directly testified in the Scripture. The which voyage was very different from that which Ionas pretended to Tharsis; seeing that Asiongaber is the port of a Cittie of Idumea, seated vpon the Straight, whereas the red sea ioynes with the great Ocean. From this Ophir and this Tharsis they brought to Salomon gold, silver, Elephants teeth,[1] Monkies, Indian Cocks,[2] and their voyage was of three yeeres; all which without doubt ought to bee vnderstood of the East Indies, which is fruitfull and aboundant of all these thinges, as Plinie testifieth, and our owne experience doth witnes. From our Peru doubtlesse they could not bring any Elephants teeth, those beastes beeing vnknowne there; but they might well bring gold, silver, and pleasant monkies.[3] Finally, the holy Scripture, in my opinion, doth commonly vnderstand by this word of Tharsis, eyther the great Sea, or farre and strange Regions. So as he supposeth that the prophecies which speake of Tharsis (seeing the spirit of Prophecie may comprehend all things) may often be applied to things of our new world.

Chap. xv.—*Of the Prophecie of Abdias, which some doe interpret to be the Indies.*

Many say and affirme that in the holy Scripture it was foretold long before that this new worlde should be converted to Iesus Christ by the Spanish nation, and to this purpose they expound the text of the Prophecie of Abdias, which sayth thus: "And the transmigration of this host of

[1] "Marfil." [2] "Pavos." [3] "Monos muy graciosos."

the children of Ishmael shall possesse all the dwellings of the Cananites vnto Sarepte, and the transmigration of Ierusalem, which is at Bosforo, shall possesse the Citties of the South, and they that shall save, shall come vp to the hill of Sion to iudge the mount of Esau, and the kingdome shall bee the Lordes."[1] There is no sufficient testimony of the Ancients, nor pertinent reasons to proove that Sepharad, which S. Ierome doth interpret the Bosphor or Straight, and the 70 Interpreters Euphrates, should signifie Spaine, but onely the opinion of some who hold it. Others alleage the Caldean Paraphrase, which is of this opinion, and the ancient Rabbins, which expound it on this sort; as also that Zarphat is France, which the vulgar and the 70 Interpreters call Sarepta. But leaving this dispute, which belongs to men of more leisure, what necessitie is there to beleeve that the citties of the South or of Negeb (as the 70 write) be those of this new world? Moreover, what need is there to beleeve and to take the Spanish Nation for the transmigration from Ierusalem to Sapharad, vnlesse we will vnderstand Ierusalem spiritually, and thereby the Church? So as by the transmigration from Ierusalem to Sapharad, the holy spirite shewes vs the children of the holy Church, which inhabit the ends of the earth and the banks of the Sea, for so is Sapharad vnderstood in the Syrian tongue, and doth well agree with our Spaine, which according to the Ancients is the ende of the earth, beeing in a manner all invironed with Sea. And by the Citties of the South we may well vnderstand these Indies, seeing the greatest part of this newe worlde is seated in the South, and the better part looks to the Pole Antartike. That

[1] "And the captivity of this host of the children of Israel shall possess that of the Canaanites even unto Zarephath, and the captivity of Jerusalem, which is in Sepharad, shall possess the cities of the south. And saviours shall come up on Mount Zion to judge the Mount of Esau; and the kingdom shall be the Lord s."—*Obadiah*, verses 20, 21.

Lib. i. which followeth is easie to interpret, viz., "They which procure Salvation shall ascend the hill of Sion to iudge the mount of Esau". For wee may say they vnite themselves to the doctrine and strength of the holy Church, which seeke to breake and disperse the prophane errors of the Gentiles, for that may be interpreted to iudge the mount of Esau, whereby it followes that in those daies the Realme shall neyther bee for the Spaniards nor for them of Europe, but for Iesus Christ our Saviour. Whosoever shall expound the Prophecie of Abdias[1] in this sort ought not to be blamed; being most certaine that the holy Spirit did vnderstand all secrets long before. And it seemes there is great reason to beleeve that mention is made in the holy Scripture of a matter of such importance as the discoverie of the Indies, of the new world, and their conversion to the faith. Isaias saith in these wordes: "Oh the wings of ships which come from the other part of Ethiopia."[2] Many learned Authors hold that al this Chapter is vnderstood of the Indies; and that same Prophet in an other place saith: "Those which shall escape out of Israel shal goe farre off to Tharsis and to remote Ilands, where they shal convert many Nations vnto the Lord." Amongest the which hee names Greece, Italie, Affricke, with many others; the which without doubt may well bee applied vnto the conversion of the Indies. Being most certaine that the Gospel shall be preached generally throughout the world, as our Saviour hath promised, and then the ende of the world shall come. It followes then, and so we ought to vnderstand it, that there be many Nations vpon the face of the earth to whom Iesus Christ hath not yet been preached. Whereby we may gather that there remained a great part of the world vnknowne to the Ancients, and that yet at this day there is a good part to discover.

Isay. xviii, iuxta, 70 Interp.

Isay. lxvi.

[1] Obadiah.

[2] "Woe to the land shadowing with wings, which is beyond the rivers of Ethiopia."—*Isaiah* xviii, 1.

CHAP. XVI.—*By what meanes the first men might come to the Indies, the which was not willingly, nor of set purpose.*

Now it is time to make answer to such as say there are no Antipodes, and that this region where we live cannot bee inhabited. The huge greatnes of the Ocean did so amaze S. Augustine as he could not conceive how mankind could passe to this new-found world. But seeing on the one side wee know for certaine that many yeeres agoe there were men inhabiting in these parts, so likewise we cannot deny but the scripture doth teach vs cleerely that all men are come from the first man, without doubt we shall be forced to beleeve and confesse that men have passed hither from Europe, Asia, or Affricke, yet must wee discover by what meanes they could passe. It is not likely that there was an other Noes Arke by the which men might be transported into the Indies, and much lesse any Angell to carie the first man to this new world, holding him by the haire of the head, like to the Prophet Abacuc; for we intreat not of the mightie power of God, but only of that which is conformable vnto reason, and the order and disposition of humane things. Wherefore these two things ought to be held for wonderfull and worthie of admiration, yea, to bee numbred among the secrets of God. The one is, how man could passe so huge a passage by Sea and Lande; the other is, that there beeing such multitudes of people they have yet beene vnknowne so many ages. For this cause I demaund, by what resolution, force or industrie, the Indians could passe so large a Sea, and who might be the Inventer of so strange a passage? Truely I have often times considered thereof with my selfe, as many others have done, but never could I finde any thing to satisfie mee. Yet will I say what I have conceived, and what comes presently into my minde, seeing that testimonies faile mee whom I might follow, LIB. I.

Lib. I.

suffering myselfe to be guided by the rule of reason, although it be very subtill. It is most certaine that the first men came to this land of Peru by one of these two meanes, either by land or by sea. If they came by sea, it was casually, and by chance, or willingly, and of purpose. I vnderstand by chance being cast by force of some storme or tempest, as it happens in tempestuous times. I meane done of purpose, when they prepared fleetes to discover new lands. Besides these two meanes I see it is not possible to find out any other, if wee will follow the course of humane things and not devise fabulous and poeticall fictions; for no man may thinke to finde another Eagle as that of Ganimede, or a flying Horse like vnto Perseus, that should carie the Indians through the aire; or that peradventure these first men haue vsed fishes, as Mirmaids, or the fish called a Nicholas,[1] to passe them thither. But laying aside these imaginations and fopperies,[2] let vs examine these two meanes, the which will bee both pleasant and profitable. First, in my iudgement, it were not farre from reason to say that the first and auncient people of these Indies have discovered and peopled after the same sort as wee do at this day, that is, by the Arte of Navigation and aide of Pilots, the which guide themselves by the heigth and knowledge of the heavens, and by their industrie in handling and changing of their sailes according to the season. Why might not this well be? Must we beleeve that we alone, and in this our age, have onely the Arte and knowledge to saile through the Ocean? Wee see even now that they cut through the Ocean to discover new lands, as not long since Alvaro Mendaña and his companions did, who parting from the Port of Lima came alongst the West to discover the land which lieth Eastward from Peru; and at the end of three moneths they discovered the Ilands which they call the Ilands of

[1] "Pexes Syrenas y Nicolaos."

[2] "Platicas de burlas."

Salomon,[1] which are many and very great, and by all likelehood they lie adioyning to new Guinnie, or else are very neere to some other firme land. And even now by commandement from the King and his Counsell they are resolved to prepare a new fleete for these Ilands.[2] Seeing it is thus, why may we not suppose that the Ancients had the courage and resolution to travell by sea, with the same intent to discover the land, which they call Antichthon, opposite to theirs, and that, according to the discourse of their Philosophie, it should be with an intent not to rest vntill they came in view of the landes they sought? Surely there is no repugnancie or contrarietie in that which wee see happen at this day, and that of former ages, seeing that the holy scripture doth witnes that Solomon tooke Masters and Pilots from Tyre and Sidon, men very expert in Navigation, who by their industry performed this voiage in three yeeres. To what end thinke you doth it note the Arte of Mariners and their knowledge, with their long voiage of three yeeres, but to give vs to vnderstand that Solomons fleete sailed through the great Ocean? Many are of this opinion, which thinke that S. Augustine had small reason to wonder at the greatnes of the Ocean, who might well coniecture that it was not so difficult to saile through, considering what hath been spoken of Solomons Navigation. But to say the truth, I am of a contrary opinion, neither can I perswade my selfe that the first Indians came to this new world of purpose, by a determined voiage; neither will I yeeld, that the Ancients had knowledge in the Art of Navigation, whereby men at this day passe the Ocean, from one part to another, where they please, the which they performe with an incredible swiftnes and resolution; neither do I finde in all Antiquities any markes or testimonies of so notable a thing and of so great importance. Besides,

2 Para., ix. 3 Reg., x.

[1] In 1567.

[2] The second expedition of Mendaña sailed from Peru in 1595.

Lib. I.

I finde not that in ancient bookes there is any mention made of the vse of the Iman or Loadstone,[1] nor of the Compasse to saile by;[2] yea, I beleeve they had no knowledge thereof. And if we take away the knowledge of the compasse to saile by, we shall easily iudge how impossible it was for them to passe the great Ocean. Such as haue any knowledge of the sea vnderstand me well; for that it is as easie to beleeve that a Mariner in full sea can direct his course where hee please without a compasse, as for a blinde man to shew with his finger any thing, be it neere or farre off. And it is strange that the Ancients have been so long ignorant of this excellent propertie of the load stone; for Plinie, who was so curious in naturall causes, writing of this load stone, speakes nothing of that vertue and propertie it hath, alwaies to turne the iron which it toucheth towards the North, the which is the most admirable vertue it hath. Aristotle, Theophrastus, Dioscorides, Lucretius, nor any other Writers or naturall Philosophers that I have seene, make any mention thereof, although they treat of the load stone. Saint Augustine, writing many and sundry properties and excellencies of the load stone in his bookes of the Citie of God, speakes nothing thereof. And without doubt all the excellencies spoken of this stone are nothing in respect of this strange propertie, looking alwaies towards the North, which is a great wonder of nature. There is yet another argument, for Plinie, treating of the first inventers of Navigation, and naming all the instruments, yet he speakes nothing of the compasse to saile by, nor of the load stone. I say onely, that the art to know the starres was invented by the Phœniciens. And there is no doubt but whatsoever the Ancients knew of the Art of Navigation was onely in regard of the starres, and observing the Shoares, Capes, and differences of landes.

Plin., lib. iii, cap. 6; and lib. xxxiv, cap. 1, 14; and lib. vii, cap. 4.

Dios., lib. v, cap. 10.

Lucret., lib. vi.

Aug. de Civit. Dei, cap. iv, 4, vbi mult de magnete.

Plin., lib. vii, c. 16.

[1] "Iman"—the load stone.

[2] "Aguja de Marear"—Mariner's compass.

And if they had once lost the sight of land, they knew not which way to direct their course, but by the Stars, Sunne, and Moone, and that failing (as it doth often in a darke and cloudie season) they did governe themselves by the qualitie of the winds, and by coniecture of the waies which they had passed. Finally, they went as they were guided by their owne motions. As at the Indies, the Indians saile a long way by sea, guided onely by their owne industrie and natural instinct. And it serues greatly to purpose that which Plinie writes of the Ilanders of Taprobana (which at this day we call Sumatra), speaking in this sort, when as he treates of the art and industrie they vse in sailing. "Those of Taprobana see not the North to saile by, which defect they supply with certaine small birdes they carrie with them, the which they often let flie, and as those birdes by a naturall instinct flie alwaies towards the land, so the Mariners direct their course after them." Who doubtes then if they had had any knowledge of the compasse they would not have vsed these little birdes for their guides to discover the Land. To conclude, this sufficeth to shew that the Ancients had no knowledge of the secrets of the Loadstone, seeing that for so notable a thing there is no proper word in Latine, Greeke, or Hebrew, for a thing of such importance could not have wanted a name in these tongues if they had knowne it. Wherevpon the Pilots at this day, to direct him his course that holds the helme, sit aloft in the poope of the Shippe, the better to observe the compasse; whereas in olde time they sat in the prow of the Shippe to marke the differences of lands and seas, from which place they commaunded the Helme as they vse at this day at the entrie or going out of any Port or haven, and therefore the Greekes called Pilots Proritas, for that they remained still in the prow.

Chap. xvii.—*Of the properties and admirable vertue of the Adamant stone for Navigation, whereof the Ancients had no knowledge.*

Lib. i. By that which hath been formerly spoken, it appeares that the Navigation to the Indies is as certaine and as short as wee are assured of the Adamant stone. And at this day we see many that have sailed from Lisbone to Goa, from Siville to Mexico, and through all the South sea, even vnto China, and to the straight of Magellan, and that as certainely and as easily as the Husbandman goeth from his Farme vnto the Citie. We have also seene men that have made fifteene, yea, eighteene voiages to the Indies, and we have heard speake of some Ancients which have made above twentie voiges, passing and repassing the great Ocean, in the which they have not seene any signes of such as have traveled nor met with any passengers to demand the way of them. For as the Wise man saith, "a ship cutteth the waves of the water leaving no way where it passeth, nor any path in the flouds."[1] But by the vertue and propertie of the Adamant stone it makes as it were a beaten path in this Ocean. The high Creator of all things having imparted this vertue vnto it, that by the touch of iron it hath alwaies his motion and aspect towards the North, in what part of the world soever you be. Some search what should be the cause of this wonderfull propertie, and imagine I know not what simpathie. But for my part I take more pleasure and content in the consideration of these wonders to praise the power and greatnes of the Almightie, and reioyce in the contemplation of his admirable workes, and to say with Solomon, speaking vpon this subiect, "O

Sap. iv.

[1] "As a ship that passeth over the waves of the water, which, when it is gone by, the trace thereof cannot be found, neither the pathway of the keel in the waves."—*Wisdom of Solomon*, v. 10.

father whose providence governes and maintaines a peece of wood, giving it an assured way vpon the sea, and in the midst of the swelling waves, to shew that in the like sort thou canst save and deliver man from all perill and shipwracke; yea, although he were in the midst of the sea without shippe. But for that thy works are full of wisedome, men hazard their lives in a small peece of wood, and passe through the sea in a shippe and are saved."[1] And vpon the same subiect the Psalmist saieth, "They which go to the sea in shippes and trafficke by the great waters, have seene the workes of the Lord and his wonders in the depth of the sea." And in truth it is not one of the least wonders of God that the force of so small a stone should command the sea and force the infinite depth thereof to obey him and follow his commandement. But for that it is an vsuall thing and seemes easie men do not admire it nor take any great regard thereof, and for that his bountie is such the ignorant make lesse account thereof. Notwithstanding, such as will duly consider it, are led by reason to blesse the wisedome of God, and to give him thankes for so great a benefite. Being then decreed in heaven that these nations of the Indies which have lyen so long hidden should bee knowne and discovered, and that this rowt should be frequented to the end so many soules should come to the knowledge of Iesus Christ and winne eternall life. There was an assured guide provided for such as travell that way, that is, the Compasse to saile by, and the vertue of the Adamant stone. Wee doe not certainely know at what time this Art of sailing was brought to light. But for my part I hold for certaine that it is not verie ancient, for besides the reasons alleadged in the former chapter, I have not read in any ancient Author, treating of dialles, any mention made of the Adamant. And yet, undoubtedly, the principall and most necessarie instrument for sunne dialls which we vse at this

LIB. I.

Sap. xiv.

Psal. cvi.

[1] *Wisdom of Solomon*, xiv, 3, 4, 5.

Lib. i.

day is the needle of iron touched with the Adamant stone. Some approved Authors write in the Historie of the East Indies that the first which began to discover this secret was vpon the sea was Vasco da Gama, who, in the heigth of Mosambique, met with certaine Mariners Moores which vsed this compasse or needle to saile by, and by the meanes thereof he sailed through those seas; yet they write not from whom they learned this Art. And some amongst them are of our opinion, that the Ancients were ignorant of this secret. Moreover, I will shew a greater wonder of the needle to saile by, which we might hold incredible, if we had not proofe thereof by vndoubted experience. The iron touched or rubbed with that part of the Adamant stone which is towards the South, hath this vertue, to turne alwaies and in all places to the contrarie, which is the North. Yet doth it not in all places directly regard it, but hath certaine points and climats, where it directly regardes the North and their staies; but changing this climate, it inclines a little, either to the East, or to the West, the farther it goes from this climat, which the Mariners cal North-east, or North-west, which is to say, coasting or inclining to the East or to the West. And it is a thing of such consequence to vnderstand this declining or coasting of the needle, that if they observe it not advisedly, although it bee small, they shall stray wonderfully in their course, and arrive in another place then where they pretended to go. Once a very expert Pilot of Portugal told mee that there were foure poyntes in all the world, whereas the needle looked directly towards the North, the which hee named, but I do not well remember them. One is in the height of the Iland of Corvo at the Terceres or Açores, which is very well knowne to all men; but passing to a greater altitude it declines to the West, and contrariwise, drawing to a lesse altitude towardes the Equinoctiall it leanes to the East. The masters of this Arte can well tell

Lib. i, de Ital. illust. reg. 13. Plin., lib. ii, cap. 72; and lib. vii, ca. vlt.

Osorius de reb. gest. Eman., lib. i.

how farre and how much. For my part I would gladly know, of such as presume to knowe all thinges, what should bee the cause of this effect, and for what reason a little yron touched with the Adamant stone receyves such vertue as to looke alwayes towards the North, and with such dexteritie, that it vnderstandeth the sundry Climates and scituations of the world, and which way it should turn and incline, as well as any Philosopher or Cosmographer whatsoever. And seeing wee cannot well discover the causes and reasons of these thinges which wee see dayly, without doubt they were very hard to beleeve if they were not apparent. Herein we discover our follie and vanitie, to make ourselves iudges and to subiect divine and high things to our reason and discourse. It is therefore better, as S. Gregorie the divine sayth, to subiect reason vnto faith, for that in her owne mansion she hath no governement. But this shall suffice. Let vs returne to our purpose, and conclude that the vse of the needle to sayle by was vnknowne to the Ancients, whereby we may resolve that it was impossible to make a determined voyage, parting from the other world, to come to this by the Ocean.

CHAP. XVIII.—*Wherein an answere is made to them that say that in times passed they have sayled through the Ocean as at this day.*

That which is alleaged to the contrary of that which hath beene spoken, that Salomans Fleet sayled in three yeeres, is no sufficient proofe, seeing the holy Scripture doth not directly affirme, that this voyage continued three yeeres, but that it was made once in three yeeres. And although wee graunt that the voyage lasted three yeeres, it might bee, as it is likely, that this Fleet sayling towards the East Indies was stayed in their course by the diversitie of

Lib. 1.

Ports and Regions, which they discovered; as at this day, in all the South Sea, they sayle from Chile to newe Spaine, the which voyage, although it bee more certaine, yet is it longer by reason of the turnings they are forced to make vpon the Coast, and they stay in divers Portes. And in trueth I doe not find in ancient bookes that they have lanched farre into the Ocean, neyther can I beleeve that this their sayling was otherwise then they vse at this day in the Mediterranean Sea; which makes learned men to coniecture that in old time they did not sayle without owers,[1] for that they went alwayes coasting along the shoare; and it seems the holy Scripture doth testifie as much, speaking of that famous voyage of the Prophet Ionas, where it sayes, that the Marriners being forced by the weather, rowed to land.

Chap. xix.—*That we may coniecture how the first inhabitants of the Indies came thither by force of weather, and not willingly.*

Having shewed that there is no reason to beleeve that the first Inhabitants of the Indies came thither purposely, it followeth then, that if they came by Sea, it was by chance or by force of weather, the which is not incredible, notwithstanding the vastnesse of the Ocean, seeing the like hath happened in our time, when as that Marriner, whose name we are yet ignorant of, to the end so great a worke, and of such importance, should not be attributed to any other Author then to God, having, through tempest, discovered this new world, left for payment of his lodging, where he had received it, to Christopher Columbus, the knowledge of so great a secret.[2] Even so it might chance that some of

[1] "Que antiguamente no navegaban sin remos."

[2] On this story, see my note in the first volume of the *Royal Commentaries of Garcilasso de la Vega*, p. 21.

Europe or Affricke in times past, have bin driven by foule weather, and cast vpon vnknowne lands beyond the Ocean. Who knoweth not that most, or the greatest part of the Regions in this newe world, were discovered by this meanes, the which we must rather attribute to the violence of the weather then to the spirit and industrie of those which have discovered. And to the end we may know that it is not in our time onely that they have vndertaken such voiages, through the greatnesse of our shippes, and the valour and courage of our men, we may reade in Plinie that many of the Ancients have made the like voyages, he writes in this manner: "It is reported that Caius Cæsar, sonne to Augustus Cæsar, having charge vpon the Arabian Sea, did there see and finde certaine pieces and remainders of Spanish shippes that had perished." And after he saith: "Nepos reportes of the Northerne circuite, that they brought to Quintus Metellus Cæler, companion in the Consulship to Caius Affranius (the same Metellus being then Proconsull in Gaule) certaine Indians which had beene presented by the King of Suevia; the which Indians, sailing from India, for their trafficke, were cast vpon Germanie by force of tempest." Doubtles, if Plinie speaketh truth, the Portugales in these daies, saile no further then they did in those two shipwrackes, the one from Spaine to the Red Sea, the other from the East Indies to Germanie. The same Author writes in another place that a servant of Annius Plocanius, who farmed the customes of the Red Sea, sailing the course of Arabia, there came so furious a Northerne wind, that in fifteene daies he passed Caramania and discovered Hippuros, a port in Taprobane, which at this day we call Sumatra. And they report of a shippe of Carthage, which was driven out of the Mediterranean Sea by a Northerne wind, to the view of this new world. The which is no strange thing to such as have any knowledge of the sea, to know that sometimes a storme continues long

Plin., lib. ii, c. 69.

Plin., lib. vi, c. 22.

Lib. I.

and furious, without any intermission. I my selfe going to the Indies, parting from the Canaries, have in fifteene daies discovered the first land peopled by the Spaniards. And without doubt this voiage had been shorter, if the Mariners had set vp all their sailes to the Northerne winds that blew. It seemes therefore likely to me that, in times past, men came to the Indies against their wills, driven by the furie of the winds. In Peru, they make great mention of certaine Giants, which have been in those parts, whose bones are yet seene at Manta and Puerto Viejo, of a huge greatnes, and by their proportion they should be thrice as big as the Indians.[1] At this day they report that the Giants came by sea, to make warre with those of the Countrie, and that they made goodly buildings, whereof at this day they shew a well, built with stones of great price. They say moreover, that these men committing abominable sinnes, especially against nature, were consumed by fire from heaven. In like sort, the Indians of Yca and Arica report, that in old time they were wont to saile farre to the Ilands of the West, and made their voiages in Seales skinnes blowne up.[2] So as there wants no witnesses to prove that they sailed in the South sea before the Spaniards came thither. Thus we may well coniecture that the new world began to be inhabited by men that have been cast vpon that coast by the violence of the Northerne winds, as wee have seene in our age. So it is, being a matter verie considerable, that the workes of nature of greatest importance for the most part have been found out accidentally, and not by the industrie and diligence of man. The greatest part of phisicall hearbes, of Stones, Plants, Mettalls, Perle, gold, Adamant, Amber, Diamont, and the most part of such like things, with their properties and vertues, have rather come to the

[1] See my note on the story of these giants at page 190 of my translation of *Cieza de Leon*.

[2] See my Introduction to the translation of *Cieza de Leon*. p. xlv.

knowledge of men by chance then by art or industrie, to the end wee may know that the glorie and praise of such wonders should be attributed to the providence of the Creator, and not to mans vnderstanding; for that which we thinke to happen accidently proceedes alwaies from the ordinance and disposition of God, who does all things with reason. Lib. I.

Chap. xx.—*Notwithstanding all that hath bene said, it is more likely that the first inhabitants of the Indies came by land.*

I conclude then, that it is likely the first that came to the Indies was by shipwracke and tempest of wether, but heereupon groweth a difficultie which troubleth me much. For, suppose wee grant that the first men came from farre Countries, and that the nations which we now see are issued from them and multiplied, yet can I not coniecture by what meanes brute beastes, whereof there is great aboundance, could come there, not being likely they should have bin imbarked and carried by sea. The reason that inforceth us to yeeld that the first men of the Indies are come from Europe or Asia, is the testimonie of the holy scripture, which teacheth us plainely that all men came from Adam. We can therefore give no other beginning to those at the Indies, seeing the holy scripture saieth, that all beasts and creatures of the earth perished but such as were reserved in the Arke of Noe, for the multiplication and maintenance of their kinde; so as we must necessarily referre the multiplication of all beastes to those which came out of the Arke of Noe, on the mountaines of Ararat, where it staied. And by this meanes we must seeke out both for men and beastes the way whereby they might passe from the old world to this new. Saint Augustine, treating vpon this question, by what reason you shall finde in some Ilandes Gen. vii.

Lib. i.

Aug., lib. vi, de Ciuit., cap. 7.

Wolves, Tigers, and other ravenous beastes, which breede no profit to men, seeing there is no doubt but Elephants, Horses, Oxen, Dogges, and other beastes which serve man to vse, have been expresly carried in shippes, as we see at this day brought from the East into Europe, and transported from Europe to Peru, although the voiages be verie long. And by what meanes these beastes which yeeld no profit, but are very hurtefull (as Wolves and others of that wilde nature), should passe to the Indies, supposing, as it is certaine, that the deluge drowned all the earth. In which Treatise this learned and holy man laboures to free himselfe of these difficulties, saying that they might swim vnto these Ilands, or that some have carried them thither for their delight in hunting; or that, by the will of God, they had been newly created of the earth, after the same maner of the first creation, when God said, "Let the earth bring forth everie living thing according to his kinde, Cattle, and creeping Wormes, and the beastes of the field, every one in his kinde." But if we shall apply this solution to our purpose the matter will remaine more doubtfull, for, beginning at the last point, it is not likely, according to the order of Nature, nor conformable to the order of government established by God, that perfect creatures, as Lions, Tigers, and Wolves, should be engendered of the earth, as we see that Rattes, Frogges, Bees, and other imperfect creatures are commonly engendered. Moreover, to what purpose is that which the scripture saieth, and doth so often repeate, "Thou shalt take of all the beastes and birdes of the aire, seven and seven, male and female, to maintaine generation vpon earth"; if such beasts after the deluge should be created againe after a new kinde of creation without coniunction of male and female. And heerevpon might grow another question. Seeing such creatures are breeding on the earth (according to this opinion) wherefore are they not likewise in all other partes of the

Gen. i.

Gen. vii.

maine Land, and in many Ilandes, seeing wee must not regarde the naturall order of creation but the bountie of the Creator. On the other part, I will not hold it for a thing incredible that they have carried some of these beastes for the pleasure of hunting, for that we often see Princes and great men keepe and nourish in their cages (onely for their pleasure and greatnesse) both Lyons, Beares, and other savage beastes, especially when they are brought from farre Countries; but to speake that of Woolves, Foxes, and other beasts which yeeld no profite, and have nothing rare and excellent in them but to hurt the cattell; and to say also that they have carried them by sea for hunting, truely it is a thing that hath no sense. Who can imagine that in so long a voyage men would take the paynes to carrie Foxes to Peru, especially of that kind which they call *Anas*,[1] which is the filthiest that I have seene? Who woould likewise say that they have carried Tygers and Lyons? Truely it were a thing worthy the laughing at to thinke so. It was sufficient, yea, very much, for men, driven against their willes by tempest, in so long and vnknowne a voyage, to escape the danger of the Sea with theyr owne lives without busying themselves to carrie Woolves and Foxes, and to nourish them at Sea. If these beasts then came by Sea, wee must beleeve it was by swimming, which may happen in some Ilands not farre distant from others, or from the mayne Land, the which wee cannot denie, seeing the experience wee have, and that wee see these beasts, beeing prest to swimme day and night without wearinesse, and so to escape. But this is to be vnderstood in smal Straights and passages, for in our Ocean they would mocke at such swimmers, when as birds faile in their flight, yea, those of the greatest wing, vpon the passage of so great a Gulph. And although we finde small birdes, which flie above one hundred leagues, as

[1] *Anas*, the Quichua for a small fox. *Atoc* is another word for a fox (*Canis Azaræ*).

LIB. I.

we have often seene in our travel, yet it is a matter impossible, at the least very difficult, for birdes to passe all the Ocean. All this beeing true which wee have spoken, what way shall wee make for beastes and birdes to goe to the Indies? and how can I say they passed from one worlde to an other? I coniecture then, by the discourse I have made, that the new world, which we call Indies, is not altogether severed and disioyned from the other world; and to speake my opinion, I have long beleeved that the one and the other world are ioyned and continued one with another in some part, or at the least are very neere. And yet to this day there is no certaine knowledge of the contrary. For towards the Articke or Northerne Pole all the longitude of the earth is not discovered, and many hold that above Florida the Land runnes out very large towards the North, and as they say ioynes with the Scithike or German Sea. Others affirme that a Ship sayling in that Sea reported to have seene the coast of Bacalaos[1] which stretcheth almost to the confines of Europe. Moreover, no man knowes how farre the land runnes beyond the Cape of Mendozino[2] in the South sea, but that they affirme it is a great Continent which runnes an infinite length; and returning to the Southerne Pole no man knowes the lands on the other part of the Straight of Magellan. A ship belonging to the Bishoppe of Plasencia, which passed the Straight, reports to have sayled alwayes within sight of land; the like Hernando Lamero a Pilot doth affirme, who, forced by foule weather, passed two or three degrees above the sayd Straight. So as there is no reason or experience that doth contradict my conceit and opinion, which is, that the whole earth is vnited and ioyned in some part, or at the least the one approcheth neere vnto the other. If this be true, as in effect there is some likelyhood, the answere is easie to the doubt we have propounded, how the first Inhabitants could passe to the Indies.

[1] Newfoundland. [2] Cape Mendocino, in California.

For that wee must beleeve they could not so conveniently come thither by Sea as travelling by Land, which might be done without consideration in changing by little and little their lands and habitations. Some peopling the lands they found, and others seeking for newe, in time they came to inhabite and people the Indies, with so many nations, people, and tongues as we see.

Chap. xxi.—*By what meanes tame Beasts passed to the Indies.*

The signes and arguments, which offer themselves to such as are curious to examine the Indians maners and fashions, helpe much to maintayne the foresayd opinion; for that you shall not finde any inhabiting the Ilands that are farre from the maine Land, or from other Ilands, as the Bermudes, the reason whereof is, for that the Ancients did never sayle but alongst the coast, and in view of land; whereupon, it is reported that they have found no great Ships in any part of the Indies capable to passe such Gulphs, but onely Balsaes, Barkes, and Canoes, which are all lesse then our long boates, the which the Indians doe onely vse, with the which they could not runne through so great a Passage, without apparent danger of ship-wracke, and although their shippes had been sufficient, yet had they no knowledge of the Astrolabe or Compasse. If then they had beene but eight or tenne dayes at Sea without sight of land, they must of necessitie loose themselves, having no knowledge where they were. Wee know many Ilandes well peopled with Indians, and their usuall navigations, the which was such, as they may well performe in Canoes and boats, without any Compasse to sayle by. Whenas the Indians of Peru, which remayne at Tumbez, did see our first Spanish shippes sayling to Peru, and viewed the greatnesse

Lib. I.

of their sailes, being spread, and of the bodies of the ships, they stood greatly amazed, not beeing able to perswade themselves that they were shippes, having never seene any of the like forme and greatnesse, they supposed they had beene rockes. But, seeing them advance, and not to sincke, they stood transported with amazement, vntill that, beholding them neerer, they discovered men with beards that walked in them, whom then they held for some gods or heavenly creatures. Whereby it appears how strange it was to the Indians to have great Ships. There is yet an other reason, which confirmes vs in the foresayd opinion, which is, that these beastes (which we say are not likely to have been transported by Sea to the Indies) remayne onely on the maine Land, and not in any Ilands foure dayes iorney from the maine Land. I have made this search for proofe thereof, for that it seems to me a point of great importance, to confirme me in mine opinion, that the confines of the Indies, Europe, Asia, and Affricke have some communication one with another, or at the least, approch very neere together. There are in America and Peru many wilde beastes, as Lyons, although they be not like in greatnesse, fiercenesse, nor of the same colour, redde, to the renowned Lyons of Affrica. There are also many Tygers, very cruell, and more to the Indians then to the Spaniardes; there are likewise Beares, but in no great aboundance; of Boares and Foxes an infinite number. And yet if wee shall seeke for all these kindes of beastes in the Ilands of Cuba, Hispaniola, Iamaica, Marguerita, or Dominica, you shall not finde any. So as in the sayde Ilands, although they were very fertile, and of a great circuit, yet was there not any kind of beastes for service when the Spaniards arrived; but at this day there are so great troopes of Horses, Oxen, Kyne, Dogs, and Hogges, which have multiplied in such abundance, as now the Kine have no certaine master, but belong to him that shal first kil them, be it on

the mountaines or on the plaines; which the Indians do, onely to saue their hides, whereof they make great traffick, without any regard of the flesh to eate it. Dogges haue so increased, as they march by troopes, and endammage the cattel no lesse than wolues, which is a great inconvenience in these Ilands. There wants not onely beastes in these Ilands; but also birdes, both great and small. As for Parrots, there are many that flie by flockes; but, as I haue said, there are few of any other kinde. I haue not seene nor heard of any Partriges there, as in Peru. Likewise, there are few of those beastes which at Peru they call guanacos, and vicunas, like to wilde goates, very swifte, in whose stomacke they find the bezoar stone, which many do greatly value; sometimes you shall finde them as bigge as a hens egge, yea, halfe as bigge againe. They haue no other kinde of beastes, but such as we call Indian sheepe, the which, besides their wooll and flesh (wherewith they clothe and feede themselues), do serue them as Asses to beare their burthens. They carrie halfe as much as a mule, and are of small charge to their masters, having neede neither of shooes, saddle, nor oates to liue by, nor of any furniture, for that Nature hath prouided them of all these, wherein she seemes to haue fauoured these poore Indians. Of all these creatures, and of many other sortes, whereof I will make mention, the maine land at the Indies aboundes. But in the Ilands there are not any found, but such as the Spaniards haue brought. It is true, that once one of our Friars did see a tiger in an Iland, as hee reported vnto vs vpon the discourse of his peregrination and ship-wracke; but being demanded how farre it was from the maine land, he answered, sixe or eight leagues at the most; which passage tigers might easily swimme over. We may easily inferre by these arguments, and others like, that the first Indians went to inhabit the Indies more by land then by sea; or if there were any nauigation, it was neither great

Lib. i.

nor difficult, being an indubitable thing, that the one world is continued and ioyned with the other, or at the least they approach one neerer vnto another in some parts.

Chap. xxii.—*That the lineage of the Indians hath not passed by the Atlantis Iland as some do imagine.*

Sap., cap. xii.

Some (following Platoe's opinion, mentioned before) affirme that these men parted from Europe or Affricke to go to that famous and renowned Iland of Atlantis, and so passed from one Iland vnto another, vntill they came to the maine land of the Indies, for that Cricias of Plato in his Timeus discourseth in this maner. If the Atlantis Iland were as great as all Asia and Affrike together, or greater, as Plato saies, it should of necessitie containe all the Atlantike Ocean, and stretch even vnto the Ilands of the new world. And Plato saieth moreover that by a great and strange deluge the Atlantis Iland was drowned, and by that meanes the sea was made vnnavigable, through the aboundance of banckes, rockes, and roughnesse of the waves, which were yet in his time. But in the end the ruines of this drowned Iland were setled, which made this sea navigable. This hath been curiously handled and discoursed of by some learned men of good judgement, and yet, to speak the truth, being well considered, they are ridiculous things, resembling rather to Ovid's tales then a Historie or Philosophie worthy of accompt. The greatest part of Platoe's Interpreters affirme that it is a true Historie, whatsoever Cricias reports of the strange beginning of the Atlantis Iland, of the greatnes thereof, of the warres they had against them of Europe, with many other things. That which gives it the more credite of a true Historie be the wordes of Cricias (whom Plato brings in in his Timeus), saying that the subject he means to treat of is of strange things,

but yet true. The other disciples of Plato, considering that this discourse hath more shew of a fable then of a true Historie, say that we must take it as an allegorie, and that such was the intention of their divine Philosopher. Of this opinion is Procles and Porphire, yea, and Origene, who so much regardes the writings of Plato as when they speake thereof they seeme to bee the bookes of Moses or of Esdras, and whereas they thinke the writings of Plato have no shew of truth; they say they are to be vnderstood mystically, and in allegories. But, to say the truth, I do not so much respect the authoritie of Plato (whom they call Divine), as I wil beleeve he could write these things of the Atlantis Iland for a true Historie, the which are but meere fables, seeing hee confesseth that hee learned them of Critias, being a little childe, who, among other songs, sung that of the Atlantis Iland. But whether that Plato did write it for a true Historie or a fable, for my part I beleeve that all which he hath written of this Iland, beginning at the *Dialogue of Timeus* and continuing to that of Critias, cannot be held for true but among children and old folkes. Who will not accoumpt it a fable to say that Neptune fell in love with Clite, and had of her five paire of twinnes at one birth. And that out of one mountaine hee drew three round balles of water and two of earth, which did so well resemble as you would have judged them all one bowell. What shall wee say, moreover, of that Temple of a thousand paces long and five hundred broade, whose walles without were all covered with silver, the seeling of gold, and within ivorie indented and inlaied with gold, silver, and pearle. In the end, speaking of the ruine thereof, he concludes thus in his time: "In one day and one night came a great deluge, whereby all our souldiers were swallowed by heapes within the earth, and in this sort the Atlantis Iland being drowned, it vanished in the Sea." Without doubt it fell out happily that this Iland vanished so suddenly, seeing it was bigger

Lib. i.

than Asia and Affrike, and that it was made by enchantment. It is in like sort all one to say that the ruines of this so great an Iland are seene in the bottome of the sea, and that the Mariners which see them cannot saile that way. Then he addes: "For this cause vnto this day that Sea is not navigable, by reason of the bancke, which by little and little has growne in that drowned Iland." I would willingly demand what Sea could swallow vp so infinite a continent of land, greater then Asia and Affrike, whose confines stretched vnto the Indies, and to swallow it vp in such sort as there should at this day remaine no signes nor markes thereof whatsoever, seeing it is well knowne by experience that the Mariners finde no bottome in the Sea where they say this Iland was. Notwithstanding, it may seeme indiscreete and farre from reason to dispute seriously of those things which are reported at pleasure, or if we shall give that respect to the authoritie of Plato (as it is reason) we must rather vnderstand them to signifie simply, as in a picture, the prosperitie of a Citie, and withall the ruine thereof. For the argument they make to prove that this Atlantis Iland hath been really and indeede, saying that the sea in those parts doth at this day beare the name of Atlantike is of small importance, for that wee knowe Mount Atla, whereof Plinie says this sea tooke the name, is vpon the confines of the Mediterranean Sea. And the same Plinie reportes that joyning to the said Mount there is an Iland called Atlantis, which he reports to be little and of small accompt.

Plin., lib. v, cap. 1; and lib. vi, cap. 31.

Chap. xxiii.—*That the opinion of many which holde that the first race of the Indians comes from the Iewes is not true.*

Now that wee have shewed how vnlikely it is that the first Indians passed to the Indies by the Atlantis Iland, there are others holde opinion that they tooke the way,

whereof Esdras speakes in his fourth booke, in this manner: "And whereas thou sawest that he gathered an other peaceable troope vnto him, thou shalt know those are the ten tribes, which were carried away captives out of their own land in the time of king Ozeas, whom Salmanazar, king of the Assyrians tooke captives, and ledde them beyond the river, so were they brought into an other land; but they tooke this counsell to themselves to leave the multitude of the heathen, and go forth into a farther countrie, where never mankind dwelt, that they might there observe their statutes, which they could not keepe in their owne land; and they entred by the narrowe passages of the river Euphrates, for then God shewed his wonders, and stayed the springs of the flood untill they were passed over; for the way vnto that countrie is very long, yea, of a yeere and a halfe, and this Region is called Arsareth;[1] then dwelt they there vntill the latter time, and when they come forth againe the most Mightie shall hold still the springs of the river againe, that they may goe through; for this cause sawest thou this multitude peaceable."[2] Some will apply this text of Esdras to the Indies, saying, they were guided by God, whereas never mankinde dwelt, and that the land where they dwelt is so farre off, as it requires a yeere and a halfe to performe the voyage, beeing by nature very peaceable. And that there are great signes and arguments amongst the common sort of the Indians, to breed a beleefe that they are descended from the Iews; for, commonly you shall see them fearefull, submisse, ceremonious, and subtill in lying. And, moreover, they say their habites are like vnto those the Iewes vsed; for they weare a short coat or waste-coat, and a cloake imbroidered all about; they goe bare-footed, or with soles tied with latchets over the foot, which they call ojatas.[3] And they say, that it appears by

4 Esdr. xiii.

[1] Ararat, or Armenia.

[2] *Esdras*, xiii, 39 to 47.

[3] *Usuta*. The Quichua word for sandals.

Lib. I.

their Histories, as also by their ancient pictures, which represent them in this fashion, that this attire was the ancient habite of the Hebrewes, and that these two kinds of garments, which the Indians onely vse, were vsed by Samson, which the Scripture calleth *Tunicam et Syndonem;* beeing the same which the Indians terme waste-coat and cloake. But all these coniectures are light, and rather against them then with them; for wee know well, that the Hebrewes vsed letters, whereof there is no shew among the Indians; they were great lovers of silver, these make no care of it; the Iews, if they were not circumcised, held not themselves for Iewes, and contrariwise the Indians are not at all, neyther did they ever vse any ceremonie neere it as many in the East have done. But what reason of coniecture is there in this, seeing the Iewes are so careful to preserve their language and Antiquities, so as in all parts of the world they differ and are known from others, and yet at the Indies alone, they have forgotten their Lineage, their Law, their Ceremonies, their Messias; and, finally, their whole Indaisme. And whereas they say, the Indians are feareful cowards, superstitious, and subtill in lying; for the first, it is not common to all, there are some nations among the Barbarians free from these vices, there are some valiant and hardy, there are some blunt and dull of vnderstanding. As for ceremonies and superstitions, the Heathen have alwayes vsed them much; the manner of habites described which they vse, being the plainest and most simple in the world; without Arte, the which hath been common, not onely to the Hebrewes, but to all other Nations; seeing that the very History of Esdras (if wee shall beleeve the Scriptures that bee Apocrypha) make more against them then for their purpose; for hee saith in that place, that the ten tribes went from the multitude of the Heathen, to keepe their faith and ceremonies, and we see the Indians given to all the Idolatries in the world. And those which holde this

opinion, see well if the entries of the River Euphrates stretch to the Indies, and whether it be necessary for the Indies to repasse that way, as it is written. Besides, I know not how you can name them peaceable, seeing they be alwaies in warre amongst themselves. To conclude, I cannot see how that Euphrates in Esdras Apocrypha should be a more convenient passage to goe to the new world, then the inchanted and fabulous Atlantis Iland of Plato.

CHAP. XXIV.—*The reason why we can find no beginning of the Indians.*

It is easier to refute and contradict the false opinions conceyved of the Originall of the Indians, then to set downe a true and certaine resolution; for that there is no writing among the Indians, nor any certaine remembrances of their founders; neyther is there any mention made of this new world in their bookes that have knowledge of letters; our Ancients held, that in those parts, there were neyther men, land, nor haven. So as hee should seeme rash and presumptuous, that should thinke to discover the first beginning of the Indians. But we may iudge a farre off, by the former discourse, that these Indians came by little and little to this newe world, and that by the helpe and meanes of the neerenesse of lands, or by some navigation; the which seemes to mee the meanes whereby they came, and not that they prepared any armie to goe thither of purpose; neyther that they have been caried thither by any ship-wracke or tempest, although some of these things may chance in some part of the Indies; for these Regions being so great, as they containe Nations without number, we may beleeve, that some came to inhabite after one sort, and some after an other. But in the ende I resolve vpon this point, that the true and principall cause to people the

Lib. I. Indies, was, that the lands and limits thereof are ioyned and continued in some extremities of the world, or at the least were very neere. And I beleeve it is not many thousand yeeres past since men first inhabited this new world and West Indies, and that the first men that entred, were rather savage men and hunters, then bredde vp in civill and well governed Common-weales; and that they came to this new world, having lost their owne land, or being in too great numbers, they were forced of necessitie to seeke some other habitations; the which having found, they beganne by little and little to plant, having no other law, but some instinct of nature, and that very darke, and some customes remayning of their first Countries. And although they came from Countries well governed, yet is it not incredible to thinke that they had forgotten all through the tract of time and want of vse, seeing that in Spaine and Italie we find companies of men, which have nothing but the shape and countenance onely, whereby we may coniecture in what sort this new world grew so barbarous and vncivill.

Chap. xxv.—*What the Indians report of their beginning.*

It is no matter of any great importance to know what the Indians themselves report of their beginning, being more like vnto dreames, then to true Histories. They make great mention of a deluge hapned in their Countrie; but we cannot well iudge if this deluge were vniversall (whereof the scripture makes mention) or some particular inundation of those regions where they are. Some expert men say that in those Countries are many notable signes of some great inundation, and I am of their opinion which thinke that these markes and shewes of a deluge was not that of Noe, but some other particular, as that which Plato speakes of, or Deucalions flood, which the Poets sing of;

whatsoever it be, the Indians say that al men were drowned in this deluge; and they report that out of the great Lake Titicaca came one Viracocha, which staied in Tiahuanaco, where at this day there is to bee seene the ruines of ancient and very strange buildings, and from thence came to Cuzco, and so began mankinde to multiply.[1] They shew in the same lake a small island, where they faine that the sunne hid himselfe, and so was preserved; and for this reason they make great sacrifices vnto him in that place, both of sheepe and men. Others report that sixe, or I know not what number of men, came out of a certaine cave by a window, by whome men first began to multiplie; and for this reason they call them Paccari-tampu.[2] And therefore they are of opinion that the Tampus is the most ancient race of men. They say also, that Mango Capa,[3] whom they acknowledge for the founder and chiefe of their Ingas, was issued of that race, and that from him sprang two families or linages, the one of Hanan Cuzco, the other of Urin Cuzco. They say moreover, that when the Kings Ingas attempted warre and conquered sundrie Provinces, they gave a colour and made a pretext of their enterprise, saying, that all the world ought to acknowledge them; for that all the world was renued by their race and Countrie: and also that the true religion had been reveiled to them from heaven. But what availeth it to speake more, seeing that all is full of lies and vanitie, and farre from reason? Some learned men write, that all which the Indians make mention of, is not above 400 yeeres old, and whatsoever they speake of former ages, is but a confusion full of obscuritie, wherein we find no truth. The which may not seeme strange, they having

[1] See my translation of the *Royal Commentaries of Garcilasso Inca de la Vega*, i, pp. 61 to 73, for traditions of the origin of the Yncas. Also *Laws and Rites of the Yncas*, pp. 74 and 153.

[2] From *Paccari*, morning in Quichua, and *tampu*, an inn.

[3] Manco Ccapac, the first Ynca.

Lib. I. no vse of bookes, or writing; in steede whereof they vse counting with their Quipu-camayocs,[1] the which is peculiar vnto them. By which reckoning all they can report is not past 400 yeeres. Instructing my selfe carefully of them, to know from what land and what nation they passed, to that where they now live, I have found them so farre vnable to give any reason thereof, as they beleeve confidently, that they were created at their first beginning at this new world, where they now dwell. But we have freed them of this Act. xvii. error by our faith, which teacheth vs that all men came from the first man. There are great and apparant coniectures, that these men for a long time had neither Kings nor common weales, but lived in troupes, as they do at this day in Florida, the Chiriguanas,[2] those of Bresill, and many other nations, which have no certaine Kings, but as occasion is offered in peace or warre, they choose their Captaines as they please. But some men excelling others in force and Gen. x. wit, began in time to rule and domineere as Nembrot[3] did; so increasing by little and little, they erected the kingdomes of Peru and Mexico, which our Spaniards found; and although they were barbarous, yet did they farre surpasse all the other Indians. Behold how the foresaid reason doth teach vs that the Indians began to multiply, for the most part, by savage men and fugitives, which may suffice touching the beginning of these men we speake of, leaving the rest vntill we treate of their Historie more at large.

[1] The *Quipu-camayoc* was the officer in charge of the *quipus* or knot records of the Yncas.

[2] A wild tribe in forests to the east of the Andes.

[3] Nimrod.

THE SECOND BOOKE

Of the Naturall and Morall Historie of the Indies.

Chap. i.—*That it is not out of purpose, but necessarie, to treate of the nature of the Equinoctiall.*[1]

For the well conceiving of things at the Indies, it is necessarie to know the nature and disposition of that Region, which the Ancients did call the burning Zone, the which they held uninhabitable, seeing the greatest part of this new world, which hath bin of late discovered, lies and is scituate vnder this region. And it seemes to me greatly to purpose which some do say, that the knowledge of things at the Indies depends on the well vnderstanding the nature of the Equinoctiall; for that the difference which is betwixt the one and the other world proceeds in a manner from the qualities of this Equinoctiall. And we must note that all the space betwixt the two Tropickes must be properly taken and held for this middle line, which is the Equinoctiall; so called, for that the Sunne running his course therein, makes the daies and nights even throughout the world; yea, they that dwell vnder this line, inioy, throughout the yeare, the same equalitie of daies and nights. In this Equinoctiall line we finde so many admirable qualities, that with great reason man's vnderstanding doth studie and labour to search out the causes, not moved therevnto so much by the doctrine of ancient Philosophers, as by reason and certaine experience.

[1] "Que se ha de tratar de la naturaleza de la Equinocial."

CHAP. II.—*For what reason the Ancients held that the burning Zone was not inhabitable.*

LIB. II.

Examining this subiect from the beginning, no man can denie that which we plainely see, that the Sunne when it drawes neere doth heate, and when it retyres, groweth cold. The daies and nightes, with the Winter and Summer, be witnesses heereof, whose varietie with the heate and cold growes by the neerenes and distance of the Sunne. Moreover it is certaine the more the Sunne approacheth and casteth his beames perpendicularly, the more the earth is scorched and burnt, the which we see plainely in the heate of the South, and in the force of Summer, whereby we may iudge, in my opinion, that the farther a Countrie is distant from the course of the Sunne, the more cold it is. So we finde by experience that the Countries and Regions which approach neerest to the North are coldest; and contrariwise, those that lie neere the Zodiake, where the Sunne keepes his course, are most hot. For this cause Ethiopia passeth Affrike and Barbarie in heate, Barbarie exceedes Andalousia, Andalousia Castile, and Arragon surpasses Biscaie and Fraunce. And the more they decline to the North the colder they are; and so by consequence, those which approach neerest to the Sunne, and are beaten perpendicularly with his beames, they do most feele the heate thereof. Some vrge another reason to this effect, which is that the motion of the heaven is very sodaine and light towards the Tropikes, but neere the Poles it is slow and heavie, whereby they conclude that the region which the Zodiake circles and conteines, is set on fire with heate for three causes and reasons; the one for the neerenes of the Sunne, the other for that his beames reflect directly, and the third for that it doth participate and feele this swift and sodaine motion of the heaven. See what reason and dis-

course teacheth vs, touching the cause of heat and cold vpon the regions of the earth. But what shall we say of the two other qualities, wet and drie? Even the same. For the drought seemes to grow by the neerenes of the Sunne, and moistnes, being retired farre off, for that the night being colder then the day, is likewise more moist; and the day which is drier, is also hotter. Winter, whilst the Sun runnes his course farther off, is more cold and rainie, and Summer, when the Sunne is neere, is more hotte and drie; for even as the fire hath the propertie to parch and burne, so hath it to drie vp the moistnes. These things therefore considered, Aristotle and other Philosophers attribute vnto the regions of the South, which they call burning, an excessive heat and a drouth likewise. And therefore they said, this region is wonderfully scorched and drie; and so by consequence hath neither waters nor pastures, whereby of necessitie it must be contrarie and vnfit for mans life.

Chap. III.—*That the burning Zone is very moist, contrary to the opinion of the Ancients.*

All that we have propounded seemes vndoubtedly true, and to purpose; and yet the conclusion they would draw from it is directly false; for that the Region of the South, which they call the burning Zone, is peopled and inhabited by men; and wee our selves have stayed long there, beeing very commodious, pleasant, and agreeable. If, therefore, it be so, as we cannot denie it, that from a true proposition we cannot draw a false conclusion, and yet this conclusion should be false (as indeed it is), we must of necessitie returne backe the same way, to examine this proposition more strictly, and whence the error should proceede; we will first shew the trueth, as assured experience doth teach vs, then

Lib. II.

will we proove it, although it be verie difficult, and will endevour to give a reason, following the termes of Philosophie. The last point that wee propounded, that the drought is greatest whenas the Sunne is neerest to the earth, seemeth certaine and infallible, and yet it is very false; for there is never greater aboundance of raine in the burning Zone, then whenas the Sunne goeth directly over them, and is very neere. Truely, it is an admirable thing, and worthy observation, that the ayre is most cleere, and without rayne vnder this burning Zone, whenas the Sunne is farthest off; and contrariwise there is most rayne, snow, and mists, whenas the Sunne is neerest. Such as have not travelled in this new world, will haply thinke this incredible, and it will seeme strange even vnto such as have beene there, if they have not well observed it; but the one and the other will willingly yeeld, in noting the certaine experience of that which hath beene sayd of this part of Peru, which looks to the Southerne or Antartike Pole; the Sunne is then farthest off, when it is neerest vnto Europe, that is, in Maie, Iune, Iuly, and August, whenas hee makes his course in the Tropicke of Cancer. During which Moneths, the aire at Peru is very cleere and calme, neyther doth there fall any snow or raine; all their rivers fall much, and some are dried vp quite; but as the yeere increaseth, and the Sunne approcheth neere vnto the Tropicke of Capricorne, then begins it to raine and to snow, and their Rivers swell from October to December. Then after that the Sunne retyring from Capricorne, whenas his beames reflect directly vpon the heads of them of Peru, then is the violence of their waters great, then is the time of raine, snow, and great overflowings of their Rivers, when, as their heate is greatest, that is, from Ianuarie to mid March; this is so true and certaine, as no man may contradict it. And at that time the contrary is found in the Regions of the Pole Articke, beyond the Equinoctiall, which proceeds from the same

reason. But let vs now looke into the temperature of Panama and all that coast, as well of new Spaine, the Ilands of Barlovent, Cuba, Hispaniola, Iamaica, as of S. Iohn de Puerto Rico, wee shall, without doubt, finde that from the beginning of November vntill Aprill, they have the aire cleere and bright; the reason is, for that the Sunne passing by the Equinoctiall to the Tropicke of Capricorne, retyres from those Regions more then at any other time of the yeere. And contrariwise, they have violent showers and great swellings of water, whenas the Sunne returnes and is neerest vnto them, which is from Iune vnto September, for then his beames beate most vpon them. The like happens at the East Indies, as we learne daily by letters that come. So, as it is a generall rule, although in some places there is an exception, that in the Region of the South or burning Zone, which is all one, the aire is most cleere and driest, whenas the Sun is farthest off; and contrariwise when it approcheth, there is greatest rayne and humiditie; and even as the Sunne advanceth or retyreth little or much, even so the earth abounds or wants water and moisture.

Chap. iv.—*That in the Regions which be without the Tropicks there is greatest store of waters, whenas the Sunne is farthest off, contrary to that vnder the burning Zone.*

In Regions which lie without the Tropicks we see the contrary to that which hath beene spoken; for that the rayne is mingled with cold, and the drought with heate, the which is well knowne in all Europe and the old world, as we see in the same manner in the new world, whereof the whole Kingdome of Chile is a witnesse, which lying without the Tropicke of Capricorne, and in the same height with Spaine, is subiect to the same lawes of Winter and Summer, but that Winter is there, whenas it is Summer in Spaine, being

Lib. II.

vnder divers Poles. So as when it is cold in these Provinces, the waters are in great aboundance, which is, when the Sunne is farthest off, from the beginning of Aprill to the end of September; finally, the disposition of seasons is like to that in Europe, which is, that the heat and drought comes whenas the Sunne returnes, which is the cause that this Realme of Chile approcheth neerer the temperature of Europe then any other of the Indies, as well in the fruites of the earth as in the bodies and spirits of men. The like they report of that part which lies before the Inner Ethiopia, that stretcheth out in manner of a point vnto the Cape Bonne Esperance or Good Hope, the which they holde for a true cause of the inundations of Nile, which bee in Summer, whereof the Ancients have so much disputed, for that in that Region the Winter and raine begins in April, whenas the Sunne hath passed Aries; and these waters, which partly grow from snow and partly from raine, assemble and make great Lakes and Pooles, from whence by good and true Geographie the River of Nile proceedes, and by this meanes goes by little and little stretching out her course, till that, having runne a long way, it finally, in the time of Summer, overfloweth Egypt, which seemeth against nature, and yet it is certainely reported: for at what time it is Summer in Egypt, lying vnder the Tropicke of Cancer, then is it winter at the springes of Nile, which is vnder the other Tropicke of Capricorne. There is in America an other inundation like to that of Nile, at Paraguay, or River de la Plata, which is as much to say, as the River of silver, the which receiving yeerely infinite waters which fall from the Mountaines of Peru, doth so terribly swell in her course, and over-flowes that Region, as the Inhabitants are forced, during those Moneths, to retyre themselves into boats and Canoes, and to leave the dwelling of the Land.

Chap. v.—*That betwixt the two Tropicks the greatest abundance of raine is in Summer, with a discourse of Winter and Summer.*

To conclude, Summer is alwayes accompanied with heate and drought, in the two temperate Zones, and Winter with cold and moistnesse; but vnder the burning Zone those qualities are not alike, for that raine accompanies heate, and drought followeth the cold: I vnderstand by cold, want of excessive heat, so as Winter is taken in our Europe for the colde and raynie season, and summer for the hot and cleere season. Our Spaniards which live at Peru, and in newe Spaine, seeing these two qualities not to concurre together as in Spaine, call that season Winter, wherein there is greatest aboundance of raine and waters; and Summer, where there is little or none at all: wherein they are plainely deceived, although they affirme by a generall rule, that in the Mountaines of Peru it is Summer from the Moneth of Aprill to September, for that the raine ceaseth in that season; and that Winter is, from the moneth of September vnto Aprill, for that the showres returne then; and therefore it is winter and summer at the same time as in Spaine. So, as when the Sunne goeth directly over their heads, they then take it to be the depth of Winter, having greatest store of raine. But it is worthy to be laughed at, comming from ignorant men and vnlearned; for even as the difference betwixt the day and night proceeds from the presence or absence of the Sunne in our hemisphere, according to the motion of the first motor,[1] which is the cause of day and night; even so the difference which we see betwixt Winter and Summer proceeds from the neerenesse and distance of the Sunne, according to the motion of the said Sunne, which is the proper cause. To

Lib. ii.

[1] "Segun el movimiento del primer Mobil."

Lib. II.

speake trueth then, it is Summer whenas the Sunne is neerest, and Winter when it is farthest off. Both heate and coldnesse, and every other temperature, growes of necessitie, by the neerenesse and distance of the sunne; but to raine, or not to raine, which is humiditie and drought, doe not necessarily follow. It is therefore easie to iudge, besides this vulgar opinion, that at Peru the Winter is cleere and without raine, and the Summer full of showres, and not otherwise, as many beleeve, that the winter is hotte and the summer cold. They fall into the like error, vpon the difference they make betwixt the Plaines and the Mountaines of Peru, saying, that when it is summer vpon the mountaine, it is winter in the vallie, which is in April, Maie, Iune, Iuly, and August; for then the aire is very cleere vpon the mountaine, without any raine or mistes, and at the same season we commonly see fogges in the plaine, which they call *garua*, which is, as it were, a very gentle dew, wherewith the sunne is obscured. But winter and summer, as it is said, are caused by the neerenesse and distance of the sunne. Seeing, then, that throughout all Peru, both vpon the Mountaines and on the Plaines, the sunne approcheth and retyreth in one sort, there is no reason to say, that when it is summer in one part, that it is winter in another; yet is it no matter of any importance to contend vpon the signification of words. Let them terme them as they please, and call that summer when it raines not, although the heat be greater. But that whereunto we must have greatest regard, is the trueth of the subiect, which is, that drought and want of raine is not alwaies greatest when the sunne approcheth neerest, as we see in the burning Zone.

Chap. vi.—*That the burning Zone abounds with waters and pastures, against the opinion of Aristotle, who holds the contrarie.*

By the former Discourse wee may easily conceive that the burning Zone is not drie, but abounding with waters; the which is so true, as it exceeds all the Regions of the world for store of waters, except in some parts, where there are sands and desart Countries, as wee finde likewise in some other parts of the world. As for water from Heaven, wee have alreadie shewen that there is great aboundance of raine, snow, and haile, which especially abound in the kingdome of Peru. But as for land-waters, as rivers, fountaines, brookes, springs, floods, and lakes, I have not spoken thereof till now; yet, being an ordinarie thing, that the waters below have a correspondencie with them above, wee must not imagine that there can bee any want: and in trueth there is so great store of springs and fountaines, as you shall not finde in any Region or Countrie of the world; so many lakes, marishes, and such store of rivers, for the greatest part of America is almost uninhabitable through too great aboundance of waters; for that the rivers, swelled with the great Raines in Summer, doe often overflow their banckes with such furie, as they breake all they incounter: and in many places they cannot passe, by reason of the mudde and myre of marishes and vallies: for this cause, those that live neere to Paraguay (whereof wee have made mention), foreseeing the rising of the River before it comes, put themselves and their goods into Canoes, and so preserve themselves and their goods, floating vp and downe, almost for the space of three moneths: and when the River is returned within her boundes, then they goe to their houses, still wette and dropping with the flood. And this River is so great, as Nile, Ganges, and Euphrates all together cannot

Lib. II.

equall it. But what shall we say of the great river of Magdalena, which falles into the sea betwixt S. Martha and Carthagena, and with reason is called the great river. Sailing in those parts, I was amazed to see her streame, which was very cleere, runne ten leagues into the sea, being in breadth above two leagues, not mingling nor vanquished with the violent waves of the Ocean. But if we shall speake more of rivers, that great floud called by some the river of Amazons, by others Marañon, and by some the river of Orellana, which our Spaniards sailed in their discoveries, ought to blemish all the rest; and, in truth, I am in doubt whither I may tearme it a river or a sea. It flowes from the mountaines of Peru, from whence it receiues a great aboundance of water, both of raine and of rivers, which it gathereth into it; then passing by the great plaines of Paytiti, Dorado, and the Amazons, in the end it falles into the Ocean, almost right against the Iland of Marguerita and Trinidad.[1] It hath so large and broad a channel, specially in the last third part of her length, as it contains in it many great Ilands. And that which seemes incredible, when you saile through the midst of it, you shall see nothing but aire and water. They say, moreover, that from the midst you cannot see nor discover with the eye many great and high mountaines which are vpon the bankes, by reason of the great bredth. We have learned from credible persons the great and wonderfull bredth of this river (which, in my opinion, deserves well the name of Empresse and Queene of all flouds), which was by the report of a brother of our company, who, being then yong, sailed it in the company of Pedro de Ursua, with who mhee was present at all the

[1] Here there is confusion between the Amazon and Orinoco, derived from the story of Aguirre. See my argument in favour of Aguirre having ascended the Rio Negro and come out by the Orinoco, in my Introduction to the *Search for El Dorado*, p. xlvii. (Hakluyt Society's volume, 1861.)

adventures of this strange entrie and discoverie; and at the seditious and pernitious acts of that wicked Diego de Aguirre, from the which God delivered him to place him in our company. Such are the rivers in that region, which they call the burning Zone, and the drie and parcht vp countrie, in the which Aristotle and the Ancients affirmed there were neither waters nor pastures. But seeing I have made mention of the river of Marañon, to shew the abundance of the waters that are in the burning zone, it shall not be from the purpose to speake somewhat of that great Lake which they call Titicaca, which is in the midst of the Province of Collao. There are above ten great rivers which loose themselves entring into that Lake, and yet hath it no issue but one small current of water,[1] although some hold it to be very deepe, and of such a fashion, as it is impossible to build a bridge over it for the depth of the water, neither can they passe it by boate for the violence of the current. They passe it by an artificiall and notable practice, peculiar to the Indians, with a bridge of straw laied vpon the water, the which, being of so light a substance, sinkes not, and yet this passage is very easie and safe. This Lake containes almost foure score leagues, thirtie five in length, and fifteene in bredth at the largest place. There are many Ilands which in olde time were inhabited and tilled, but now lie waste. It brings forth a great aboundance of reedes, which the Indians call *totora*, which serves them to a thousand vses; for it is meate for swine, for horses, and for men; they make houses therewith, fire, and barkes. To conclude, the Uros in this their *totora* finde all they have neede of. These Uros be such dull and brutish people, as they esteeme not themselves men. It is reported of them, that being demanded of what nation they were, They answered, they were not men, but Uros, as it were some kinde of beastes. There are whole villages of these Uros inhabit-

[1] The river Desaguadero.

ing in the Lake in their boates of *tortora*, the which are tied together and fastened to some rocke, and often times the whole village changeth from place to place. So, as hee that would seeke them now whereas they were yesterday, shall finde no shew nor remainder of them, or of their village. The current or issue of this Lake, having runne above fiftie leagues, makes another Lake, but lesse then the first, which they call Paria, and containes in it some small Ilands, but they finde no issue thereof. Some imagine it runnes vnder the ground, and that it falles into the South sea; giving out, that there is a branch of a river which they see rise and enter into the sea neere the banke, having no knowledge of the Spring. But, contrariwise, I beleeve that the waters of this Lake dissolve and are dispearsed within the Lake it selfe, through the heate of the Sunne. This discourse seemes sufficient to prove that the Ancients had no reason to holde that the middle region was uninhabitable for the defect of waters, seeing there is such store both from heaven and on the earth.

Chap. vii.—*Shewing the reason why the Sunne without the Tropicks causeth greatest quantitie of waters when it is farthest off; and contrariwise, within them it breedeth most when it is neerest.*

Considering with my selfe often times what should cause the Equinoctial to be so moist, as I have said, to refute the opinion of the Ancients, I finde no other reason but the great force of the sunne in those partes, whereby it drawes vnto it a great aboundance of vapors from out of the Ocean, which in those parts is very great and spatious; and having drawne vnto it this great aboundance of vapours, doth suddenly dissolve them into raine, and it is approoved by many tryed experiences, that the raine and great stormes from

heaven proceed from the violent heat of the Sunne; first, as we have said before, it raines in those countries whenas the Sunne casts his beames directly vpon the earth, at which time he hath most force: but when the Sun retyres, the heat is moderate, and then there falls no raine; whereby we may conclude that the force and heat of the Sunne is the cause of raine in those Countries. Moreover, we observe, both in Peru, New Spaine, and in all the burning Zone, that the raine doth vsually fall in after-noone, when as the sunne-beames are in their greatest force, being strange to see it raine in the morning. And therefore travellers, fore-seeing it, begin their iourneys earely, that they may end and rest before noone, for they hold that commonly it raines after noone. Such as have frequented and travelled those Countries, can sufficiently speake thereof. And there are that (having made some abode there) say, that the greatest aboundance of raine is, when the Moone is at the full; but, to say the trueth, I could never make sufficient proofe thereof, although I have observed it. Moreover, the dayes, the yeere, and the moneths, shew the trueth hereof, that the violent heate of the sunne causeth the raine in the burning Zone: experience teacheth vs the like in artificiall thinges, as in a Limbecke,[1] wherein they draw waters from hearbs and flowers; for the vehemencie of the fire forceth and driveth vp an aboundance of vapours, which being pressed, and finding no issue, are converted into liquor and water. The like wee see in gold and silver, which wee refine with quicke-silver, the fire being small and slow, wee draw out almost nothing of the quicke-silver, but if it bee quicke and violent, it doth greatly evaporate the quick-silver, which incountring the head above, doth presently turne into liquor, and begins to drop downe. Even so the violent heate of the sunne produceth these two effects, when it finds matter disposed, that is, to draw vp the

[1] "Alquitares y alambiques." Both words mean a still.

Lib. II.

vapours on high, and to dissolve them presently, and turne them into raine, when there is any obstacle to consume them. And although these things seeme contrary, that one sunne within the burning Zone, being neere, should cause raine, and without the Zone afarre off should breed the like effect; so it is, that all well considered, there is no contrarietie. A thousand effects in naturall causes proceede of contrarie things by divers meanes: we drie linnen by the fire and in the aire, and yet the one heats and the other cooles; pastures are dried and hardened by the sunne and with the frost; moderate exercise provokes sleepe, being too violent, it hindereth: if you lay no wood on the fire, it dieth; if you lay on too much, it likewise quencheth: for the onely proportion entertaines and makes it to continue. To well discerne a thing, it must not be too neere the eie, nor too farre off, but in a reasonable distance proportionable; being too farre off from any thing, we loose the sight, and too neere likewise, we cannot see it. If the sunne beames be weake, they draw vp no fogge from the rivers; if they be violent, having drawne vp the vapours, they presently dissolve and consume them; but if the heat be moderate, it drawes vp and preserves it: for this reason the vapours rise not commonly in the night, nor at noone, but in morning, whenas the sunne begins to enter into his force. There are a thousand examples of naturall causes vpon this subiect, which we see do often grow from contrarie things: whereby we must not wonder if the sunne, being neere, engenders raine, and being farre off, works the like effect: but being of a moderate and proportionable distance, causeth none at all. Yet there remaines one doubt why the neerenes of the sunne causeth the raine vnder the burning Zone, and without, when it is farthest off. In my opinion, the reason is, that in Winter, without the Tropicks, the sunne hath not force sufficient to consume the vapours which rise from the land and sea; for these vapours grow

in great aboundance in the cold region of the aire, where they are congealed and thickened by the extremitie of the cold; and after being pressed, they dissolve and turne into water. Therefore, in Winter, when the sunne is farthest off, the daies short, and the nights long, his heat hath small force: but when the sunne approacheth, which is in the summer time, his force is such as it drawes vp the vapors, and suddenly consumes and disperseth them; for the heat and the length of the daies grow through the neerenes of the sunne. But within the Tropickes, vnder the burning Zone, the far distance of the sunne workes the same effects that the neerenes doth without the Tropiks; by reason whereof, it raines no more vnder the burning Zone when the sunne is farre off, then without the Tropicks when it is neerest, for that in this approaching and retyring, the sunne remaines alwaies in one distance, whence proceedes this effect of cleerenes. But when the sunne is in the period of his force in the burning zone, and that he cast his beames directly vpon the inhabitants heads, there is neither cleerenes nor drienes, as it seems there should be, but rather great and strange showers; for that by this violent heat he drawes vp suddenly a great aboundance of vapours from the Earth and Ocean, which are so thicke, as the winde, not able easily to disperse them, they melt into water, which breedeth the cold raine in so great aboundance: for the excessive heat may soone draw vp many vapours, the which are not so soone dissolved: and being gathered together through their great aboundance, they melt and dissolve into water. The which we may easily discerne by this familiar example: rost a peece of porke, mutton, or veale; if the fire be violent and the meate neere, we see the fatte melts suddenly and droppes away; the reason is, that the violent heat drawes forth the humour and fatte from the meate, and being in great aboundance, cannot dissolve it, and so it distills more away. But when

Lib. II.

the fire is moderate, and the meat in an equall distance, we see that it rostes hansomely, and the fatte drops not too suddenly, for that the moderate heat drawes out the moistnes which it consumes suddenly. And therefore Cookes make a moderate fire, and lay not their meate too neere nor too farre off, lest it melt away. The like may be seene in another experience, in candles of tallow or waxe: if the wike bee great, it melts the tallow or the waxe, for that the heat cannot consume the moistnes which riseth; but if the flame be proporcionable, the waxe melts nor droppes not, for that the flame doth waste it by little and little as it riseth. The which seemeth to me the true reason, why vnder the Equinoctiall and burning Zone, the violence of the heat doth cause raine, the which in other Regions growes through want thereof.

Chap. viii.—*How wee should vnderstand that which hath been formerly spoken of the burning Zone.*

If in naturall and phisicall things we must not seeke out infallible and mathematicall rules, but that which is ordinarie and tried by experience, which is the most perfect rule, wee must then beleeve what wee have said, that there is more humiditie vnder the burning Zone then in other Regions; and that it raines lesse there, when the sunne is neerest, must be taken and vnderstood after one sort, as in truth it is the most common and ordinarie. But this is not to hinder the exceptions which nature hath given to this rule, making some Regions of the burning Zone extreamely drie. The which is reported of Ethiopia, and wee have seene it in a great part of Peru, where all that land or coast, which they call *llanos*, wants raine, yea, land waters, except some vallies, where rivers fall from the mountaines; the rest is a sandie and barren soile, where you shall hardly

finde any springs, but some deepe welles. But with the helpe of God, wee will shew the reason why it raineth not in these *llanos* (the which many demand); for now I onely pretend to shew that there are many exceptions to naturall rules, whereby it may happen that in some part of the burning Zone it raines not when the sunne is neerest, but being farthest off, although vnto this daie I have neither seene nor heard of it; but if it be so, wee must attribute it to the particular qualitie of the earth; and also, if sometimes the contrarie doth chance, we must have regard that in naturall things there happens many contrarieties and lets, whereby they change and dissolve one another. For example, it may be the sunne will cause raine, and that the winds will hinder it, or else cause more aboundance then hath been vsuall. The windes have their properties and divers beginnings, by the which they worke divers effects, the which are most commonly contrarie to that which the order and season requires. Seeing then in all places we see great varieties in the yeere, which proceedes from the divers motions and aspectes of Planets, it is not out of purpose to say, that in the burning Zone wee may see and observe some things contrarie to that we have tried. But to conclude, that which we have spoken is a certaine and vndoubted truth, which is, that the great draught which the Ancients held to be in the middle region, which they call the burning Zone, is nothing at all; but, contrariwise, there is great humiditie, and then it raines most when the sunne is neerest.

Chap. ix.—*That the Burning Zone is not violently hotte, but moderate.*

Hitherto wee haue treated of the humiditie of the Burning Zone, now it shall be fit to discourse of the other two

qualities, Hotte and Colde. We have shewed in the beginning of this Discourse how the Ancients held that the burning Zone was hotte and exceeding drie, the which is not so; for it is hote and moist, and in the greatest part the heat is not excessive, but rather moderate, which some would hold incredible, if we had not tried it. When I passed to the Indies, I will tell what chaunced vnto mee: having read what Poets and Philosophers write of the burning Zone, I perswaded my selfe, that comming to the Equinoctiall, I should not indure the violent heate, but it fell out otherwise; for when I passed, which was when the sun was there for Zenith, being entered into Aries, in the moneth of March, I felt so great cold, as I was forced to go into the sunne to warme me; what could I else do then, but laugh at Aristotle's Meteors and his Philosophie, seeing that in that place and at that season, whenas all should be scorched with heat, according to his rules, I, and all my companions were a colde? In truth, there is no region in the world more pleasant and temperate, then vnder the Equinoctiall, although it be not in all parts of an equall temperature, but have great diversities. The burning Zone in some parts is very temperate, as in Quito, and on the coast plaines of Peru; in some partes verie colde, as at Potosi; and in some very hote, as in Ethiopia, Bresill, and the Moluccas. This diversitie being knowne, and certaine vnto vs, we must of force seeke out another cause of cold and heat then the sunne beames, seeing that in one season of the yeere, and in places of one height and distance from the Pole and Equinoctiall, we finde so great diversitie, that some are invironed with heat, some with cold, and others tempered with a moderate heat. Plato placeth his most renowned Atlantis Iland vnder the burning Zone; then he saieth, that at certaine seasons of the yeere it hath the sunne for Zenith, and yet it was very temperate, fruitfull, and rich. Plinie saieth, that Taprobana, which at this day

Plato in Tim. and Critia.

Plin., lib. vi, c. 12.

they call Sumatra, is vnder the Equinoctiall, as in effect it is, writing, that it is not onely happie and rich, but also peopled with men and beasts; whereby we may easily iudge, that although the Ancients held the heate of the burning Zone to be insupportable, yet might they well vnderstand that it was not so great as they had spoken. The most excellent Astrologer and Cosmographer, Ptolemy, and the worthie Philosopher and Physitian, Avicen, were of a better resolution, being both of opinion that vnder the Equinoctiall, there were verie commodious habitations.

Chap. x.—*That the heat of the burning Zone is temperate, by reason of the rayne and the shortnes of the dayes.*

Since the discoverie of this newe worlde, wee have found by experience that which late Writers have held for trueth. But it is a naturall thing, whenas any matter beyond our conceit is made knowne vnto vs by experience, we by and by examine the cause. Therefore wee desire to know the reason why a Region where the sunne approacheth neerest, is not onely temperate, but in many parts cold. Considering this matter generally, I finde two general causes which maketh this Region temperate; the one is that before mentioned, for that this Region is very moist and subiect to raine, and there is no doubt but the rayne doth refresh it, for that the water is by nature cold; and although by the force of the fire it be made hotte, yet doth it temper this heat proceeding onely from the sunne-beames. The which we see by experience in the inner Arabia, the which is burnt with the Sunne, having no showres to temper the violence thereof. The cloudes and mists are the cause that the sunne offends not so much, and the showers that fall from them refresh both the ayre and the earth, and moisten likewise, how hot soever it be. They

Lib. II.

drinke raine water, and it quencheth the thirst, as our men have well tried, having no other to drinke. So, as reason and experience doth teach vs, that raine of it selfe doth temper the heat; and having by this meanes shewed that the burning Zone is much subiect vnto raine, it appeares that there is matter in it to temper the violence of the heat. To this I will adde an other reason, which deserves to be knowne, not only for this matter, but for many others; for although the Sunne be very hotte and burning vnder the Equinoctiall, yet is it not long, so as the heate of the day being there shorter, and of lesse continuance, it causeth not so violent a heate; the which it behooves to specifie more particularly. Such as are practised in the knowledge of the Spheare teach very well, that the more the Zodiake is oblique and traversing our Hemisphere, the more vnequall are the daies and nights; and contrariwise, where the sphere is straight, and the signes mount directly, there the dayes and nights are equall. And therefore in all that Region which is betweene the two Tropicks, there is lesse inequality then without them, and the more we approach the Line, the lesse inequalitie we finde, the which we have tryed in those parts. Those of Quito, for that they are vnder the line, have not throughout the whole yeere the dayes and nights more short at one season then at an other, but are continually equall. Those of Lima beeing distant almost twelve degrees, finde some distance betwixt the dayes and the nights, but very little, for that in December and Ianuarie, the dayes increase an houre or little lesse. Those of Potosi finde much more difference, both in winter and in summer, being almost under the Tropicke. But those that live without the Tropikes, find the dayes in winter shorter, and in summer longer; the more remote they are from the Equinoctial and come neere the Pole, as we see in Germany and in England the daies are longer in summer then in Italie and Spaine. It is a thing which the Sphere doth

teach, and experience doth plainely shew vs. We must adde an other proposition, which is likewise true and very considerable for all the effectes of nature to vnderstand the perseverance and continuation of the efficient cause to worke and moove. This presupposed, if any one demaund of me, why vnder the Equinoctiall Line the heat is not so violent in summer as in some other Regions (as in Andalusia in the moneths of Iuly and August), I will answere, that in Andalusia the dayes are longer, and the nights shorter; and as the day being hot, inflames and causeth heat, so the nights being cold and moist, give a refreshing. According to the which, at Peru, there is no such great heat, for that the dayes in summer are not long, nor the nights short; so as the heate of the day is much tempered by the freshnesse of the night. And although the burning Zone be neerer the Sunne then all other Regions, yet doth not the heate continue there so long. It is a naturall thing that a small fire continued, heats more then a greater that lastes but little, especially if there bee any thing to refresh it. He therefore that shal put these two properties of the Zone in one ballance, that it is most rainie in the time of greatest heate, and that the dayes are shortest there, he shall perchance finde them to equall the other two contrarieties, which bee, that the Sunne is neerer and more directly over them then in other Regions.

Chap. xi.—*That there be other reasons besides the former mentioned, which shew that the burning Zone is temperate, especially alongst the Ocean.*

Being a thing concluded, that the two forenamed properties are common and vniversal to all the region of the burning Zone: and yet in the same there are found some places very hote, and other exceeding colde; Also, that the

Lib. II.

temperature is not there equall in all places, but vnder one climate, one part is hote, another colde, and the third temperate, all at one season; we are forced to seeke out other reasons, whence this great diversitie should proceede in the burning Zone. Discoursing therefore vpon this question, I do finde three apparant and certaine causes, and a fourth more obscure and darke. The apparant and certaine causes be: The first is the Ocean, the second the scituation of the land, and the third, the nature and propertie of many and sundry windes. Besides these three which I holde for manifest, I beleeve there is a fourth hidden and lesse apparant, which is the propertie of the same land inhabited, and the particular influence of the heavens. Whoso woulde neerely consider the causes and generall reasons before mentioned, shall finde them insufficient for the full resolution of this point, observing that which daily happens in diverse partes of the Equinoctiall. Manomotapa,[1] and a great part of the kingdom of Prester Iean[2] are seated vnder the line, or very neere. In which regions they endure excessive heate, and the men are all blacke; the which is not onely in those parts of the land farre from the sea, but also in Ilands invironed with the sea. The Iland of Saint Thomas is vnder the Line, the Ilands of Cape Verd are very neere, and both in the one and the other are violent heates; and the men are likewise blacke. Vnder the same line, or very neere, lies a part of Peru, and of the new kingdome of Granada, which notwithstanding are very temperate Countries, inclining rather to colde then heate, and the inhabitants are white. The Country of Bresill is in the same distance from the line with Peru, and yet both Bresill and all that coast is extreamely hot, although it be in the North sea, and the other coast of Peru, which is in the South sea, is very temperate. I say then, that whosoever would consider these differences,

[1] On the east side of Africa. [2] Abyssinia.

and give a reason thereof, cannot content himselfe with these generall rules before specified, to proove that the burning Zone may be a temperate land. Among the speciall causes and reasons, I have first placed the Sea, for without doubt, the neerenesse thereof doth helpe to temper and coole the heat; for although the water be salt, yet is it alwayes water, whose nature is cold, and it is a thing remarkeable, that in the depth of the Ocean, the water cannot be made hot by the violence of the Sunne, as in rivers; finally, even as salt-peeter (though it be of the nature of salt) hath a propertie to coole water, even so we see by experience, that in some ports and havens, the salt-water doth refresh; the which wee have observed in that of Callao, whereas they put the water or wine which they drinke, into the Sea in flaggons to be refreshed, whereby wee may vndoubtedly finde, that the Ocean hath this propertie, to temper and moderate the excessive heate; for this cause we feele greater heat at land then at sea, *Cæteris paribus*; and commonly Countries lying neere the sea, are cooler then those that are farther off. *Cæteris paribus*, as I have said, even so the greatest part of the new world, lying very neere the Ocean, wee may with reason say, although it bee vnder the burning Zone, yet doth it receive a great benefite from the sea to temper the heat.

CHAP. XII.—*That the highest landes are the coldest, and the reason thereof.*

Bvt if we shall yet search more particularly, we shall not finde in all this land an equall temperature of heate, although it be in equall distance from the sea, and in the same degree, seeing that in some partes there is great heate, and in some, very little. Doubtlesse, the cause thereof is, that the one is lower, and the other higher; which causeth that

Lib. II.

the one is hote, and the other colde. It is most certaine, that the toppes of the mountaines are colder then in the bottome of the vallies, the which proceedes, not onely that the sunne beames have greater repercussions vpon lower places, although it be a great reason; yet there is an other, which is, that the Region of the ayre is colder when it is farthest from the ground. The Plaines of Collao in Peru, of Popayan, and of new Spaine make sufficient proofe hereof. For without al doubt those parts are high countries, and for this reason cold, although they be all invironed with high points of mountaines, much subiect to the Sunne beames. But if we demand why at Peru, and in new Spaine, the Plaines along the coast be very hote, and the plaines of the same Countries of Peru and new Spaine be contrariwise colde? In truth I see no other reason can be given, but that the one is a lowe country, and the other high. Experience dooth teach vs, that the middle region of the ayre is colder than the neather. And therefore the more the mountaines approach to the middle, the colder they are, being covered with snow and frosts. Reason it selfe dooth yeelde to it. For if there be a sphere and region of fire, as Aristotle and the other Philosophers say, the middle region of the ayre must be most colde, by Antiparistasis, the colde being expelled and thickned there, as in summer time we see in wells that are very deepe. For this cause the Philosophers affirme, that the two extreame regions of the ayre, that above and the other belowe, are the hottest, and the middle region more colde. If it be thus, as experience doth teach vs, we shall yet draw out another reason and notable argument to shew that the burning Zone is temperate, which is, that the greatest part of the Indies is a high countrey, filled with many mountaines, which by their neerenesse refresh the neighbour countries. You may continually see vppon the toppes of these mountaines, snow, haile and frozen waters; and the

cold so bitter, as the grasse is all withered, so as the men and beasts which passe that way are benummed with colde. This, as I have saide, is in the burning Zone; and it happens most commonly when they have the sunne for zenith. It is therefore most certaine and conformable vnto reason, that the mountaines are colder than the vallies and plaines, for that they participate more of the middle region of the aire, which is very colde. The cause why the middle region of the ayre is more colde, hath bin shewed before; for that the region of the aire next to the fiery exhalation, the which (according to Aristotle) is vpon the spheare of the aire, repells and thrustes backe all the colde, the which retires itself into the middle region of the aire, by Antiparistasis, as the Philosophers speake. Now if any one should question with me in this manner if it be so, that the ayre is hot and moist, as Aristotle holdes, and as we commonly say, whence then proceeds the cold which is congealed in the middle region of the ayre, seeing it cannot come from the fierie spheare? For if it come from the water or the earth, by this reason the lower region of the aire should be colder than the middle. Arist. Me.

To answer truely what I thinke, I will confesse that this Argument and Obiection is so difficult as I am almost ready to follow the opinion of such as reproove the qualities, agreements, and disagreements which Aristotle gives vnto the Elements, saying they are but imaginations, who for this occasion hold the aire to be colde by nature. And to this end they vse many arguments and reasons, whereof we will propound one very familiar and well knowne, leaving the rest aparte. In the canicular dayes we are accustomed to beate the ayre with a fanne, and we finde that it doth refresh us; so as these Authors affirme that heate is no private property of any other Element but of fire only, which is dispersed and mingled with all things (as the great Dionysius doth teach us). But whether it be so or otherwise (for I Dionys. c. xv, de cœl.

Lib. II.

will not contradict Aristotle, but in that which is most certaine), in the end they agree all that the middle region of the ayre is colder than the lowest next to the earth, as experience dooth shew vs, seeing that in this middle region are congealed snowe, haile, frosts, and other signes of extreame colde. The middle region then, which they call the burning Zone, having on the one side the sea and on the other the mountaines, we must hold them for sufficient causes to temper and coole the heate.

Chap. xiii.—*That the colde windes be the principall cause to make the burning Zone temperate.*

The temperature of this region ought chiefly to be attributed to the property of the wind that blows in that country, the which is pleasant and fresh. The providence of the great God, Creator of al things, hath bin such as he hath ordained fresh and coole windes in that region where the sunne makes his course (which seemes should be burnt vp), that by their coolenes the excessive heate of the sunne might be qualified. And they are not farre from appearance of reason, which held that the earthly Paradise was vnder the Equinoctiall. If they had not deceived themselves in the cause of their opinion, saying that the equalitie of the dayes and nights was sufficient of it selfe to make that Zone temperate, to which opinion many others have beene opposite, of which number was that renowned Poet, saying—

> "That coast incessantly by hotte beames tyred
> Of Phœbus, who from thence never retyred."[1]

The coolenesse of the night then is not sufficient to mode-

[1] "Y a quella parte
Està siempre de un Sol bravo encendida
Sin que fuego jamas della se aparta."

rate and to correct the violent heate of the Sunne, but rather this burning Zone receives so sweet a temperature by the benefite of the fresh and pleasant aire, as, notwithstanding it were held by the Ancients to be more hotte then a burning furnace, yet those which inhabite there take it for a delightfull spring. It appeares by arguments and very apparant reasons that the cause heereof consistes principally in the qualitie of the winde. We see in one climate some regions and Cities hotter then others, onely for that they feele lesse winde to refresh them. The like is in other Countries where no winde blowes, the which are all on fire like vnto a furnace. There are many of these Villages and Townes in Bresill, Ethiopia, and Paraguay, as every one knoweth; and that which is more considerable, wee see these differences, not only on the Land, but also on the Sea. There are some seas where they feele great heat, as they report of that of Mozambique and Ormus in the East, and of the Sea of Panama in the West, the which for this reason engenders and brings forth great Lizards (called Cayamans), as also in the sea of Bresill. There are other seas in the same degree of height very colde, as that of Peru, in the which wee were a cold, as I have said before, when we first sailed it, which was in March, when the Sunne was directly over vs. In truth, on this continent, where the land and sea are of one sort, wee cannot imagine any other cause of this so great a difference but the qualitie of the winde which doth refresh them. If wee shall neerely look into the consideration of the winde, whereof we have spoken, wee may resolve many doubts which some obiect, and which seeme strange and wonderfull. Wherefore the Sunne casting his beames vppon the burning Zone, and particularly at Peru, and that more violently then in Spaine in the Canicular daies, yet they defend the heat with a light covering, so as with a slender covering of mats or straw they are better preserved from the heate then in Spaine vnder a roofe of wood or a

Lib. II.

vault of stone. Moreover, why are not the nightes in summer at Peru as hotte and troublesome as in Spaine? Wherefore on the highest tops of mountaines, even amongst the heaps of snow, you shall sometimes feele great and insupportable heat? Wherefore in all the Province of Collao, when ye come into the shade, how little soever, you feele colde, but, comming into the Sunne beames, you presently finde the heate excessive? Why is all the coast of Peru, being ful of sands, very temperate? And why is Potosi (distant from the silver Citie but eighteene leagues, and in the same degree) of so divers a temperature that the Countrie, being extreamely colde, it is wonderfully barren and drie? And contrariwise, the silver Citie is temperate, inclining vnto heat, and hath a pleasant and fertil soil? It is more certaine that the winde is the principall cause of these strange diversities, for without the benefite of these coole windes the heate of the Sunne is such as (although it bee in the midst of the snow) it burnes and sets all on fire; but when the coolenes of the aire returnes suddenly the heat is qualified, how great soever it be; and whereas this coole winde raines ordinarie, it keepes the grosse vapours and exhalations of the earth from gathering together, which cause a heavie and troublesome heat, whereof we see the contrarie in Europe, for by the exhalation of these vapours the earth is almost burnt vp with the Sunne by day, which makes the nights so hotte and troublesome, as the aire doth often seeme like vnto a furnace. For this reason, at Peru, this freshnes of the winde is the cause (by the meanes of some small shade at the Sunne setting) that they remaine coole. But contrariwise in Europe the most agreeable and pleasing time in summer is the morning, and the evening is the most hotte and troublesome. But at Peru, and vnder all the Equinoctiall it is not so; for every morning the winde from the sea doth cease, and the Sunne beginnes to cast his beames, and for this reason they feele the greatest heat

in the morning, vntill the returne of the same windes, which otherwise they call the tide or winde of the sea, which makes them first to feele cold. We have tried al this whilst we were at the Ilands of Barlovente, where in the mornings we did sweat for heat, and at noone we felt a fresh aire, for that then a north-easterly wind, which is fresh and coole, doth commonly blow.

Chap. xiv.—*That they which inhabite vnder the Equinoctiall, live a sweete and pleasant life.*

If those which have held opinion, that the earthly Paradice was vnder the Equinoctiall, had beene guided by this discourse, they had not seemed altogether deceived, not that I will conclude that the delightfull Paradice, whereof the Scripture speakes, was in that place, which were too great a temeritie to affirme it for certaine. But I may well say, if there be any Paradice on earth it ought to bee placed whereas they inioy a sweete and quiet temperature; for there is nothing more troublesome or repugnant to mans life, then to live vnder a heaven or aire that is contrarie, troublesome or sicklie; as there is nothing more agreeable then to inioy a heaven that is sound, sweet and pleasant. It is certaine that we do not participate of any of the Elements, nor have not the vse of any so often in our bodies as of the aire. It is that which inviroueth our bodies on all parts, which enters into our bowells, and at everie instant visits the heart, and there ingraves her properties. If the aire be anything corrupted, it causeth death; if it be pure and healthfull, it augmenteth the strength; finally, we may say, that the aire alone is the life of man; so, as although we have goods and riches, if the aire be troublesome and vnholesome, wee cannot live quietly nor with content. But if the aire be healthfull, pleasant, and sweete,

Biues, lib. xiii, de Ciuit., c. 21.

although we have no other wealth, yet doth it yeelde content. Considering with my selfe the pleasing temperature of many Countries at the Indies, where they know not what winter is, which by his cold doth freese them, nor summer which doth trouble them with heat, but that with a Matte they preserve themselves from the iniuries of all weather, and where they scarce have any neede to change their garments throughout the yeere. I say, that often considering of this, I find that if men at this day would vanquish their passions, and free themselves from the snares of covetousnesse, leaving many fruitelesse and pernicious disseines, without doubt they might live at the Indies very pleasant and happily; for that which other poets sing of the Elisean fields and of the famous Tempe, or that which Plato reports or faines of his Atlantis Iland, men should finde in these lands, if with a generous spirit they would choose rather to command their silver and their desires then to remaine slaves as they are. That which wee have hitherto discoursed shal suffice touching the qualities of the Equinoctiall, of colde, heat, drought, raine, and the causes of temperature. The particular discourse of windes, waters, landes, mettalls, plants, and beasts (whereof there is great aboundance at the Indies), shall remaine for the other bookes. The difficultie of that which is handled in this, though briefly, will haply make it seeme tedious.

An advertisement to the Reader.

The Reader mvst vnderstand, that I wrote the two first bookes in Latine, when I was at Peru, and therefore they speake of matters of the Indies, as of things present: Being since returned into Spaine, I thought good to translate them into our vulgar tongue, and not to change my former maner of speeach. But in the five following bookes, for that I made them in Europe, I have beene forced to change my stile, and therein to treate of matters of the Indies, as of Countries and things absent. And for that this diversitie of speech might with reason offend the Reader, I have thought good to advertise him thereof.

THE THIRD BOOKE

Of the Naturall and Morall Historie of the Indies.

Chap. I.—*That the naturall Historie of the Indies is pleasant and agreeable.*

Lib. III.

Everie naturall Historie is of it selfe pleasing, and very profitable, to such as will raise vp their discourse and contemplation on high, in that it doth move them to glorify the Author of all nature, as we see the wise and holy men do, specially David in many Psalmes. And Iob likewise, treating of the secrets of the Creator, whereas the same Lord answereth Iob so amplie. He that takes delight to vnderstand the wondrous works of Nature shal taste the true pleasure and content of Histories; and the more, whenas he shal know they are not the simple workes of men, but of the Creator himself, and that he shall comprehend the naturall causes of these workes, then shall he truly occupie himselfe in the studie of Philosophie. But he that shall raise his consideration higher, beholding the gret and first architect of all these marvells, he shal know his wisedom and infinite greatnes, and (we may say) shall be divinely imployed. And so the discourse of naturall things may serve for many good considerations, although the feeblenes and weakenes of many appetites are commonly accustomed to stay at things lesse profitable, which is the desire to know new things, called curiositie. The Discourse and Historie of naturall things of the Indies (besides the common content it gives) hath yet another benefite, which is to treate of things a farre off, the greatest parte whereof were

Psal. ciii, cxxxv, xci, xxxii, xviii, viii. Job xxviii, xxxix, xl, xli.

vnknowne to the most excellent Authors of that profession which have bin among the Ancients. And if wee should write these naturall things of the Indies so amply as they require, being so strange, I doubt not but we might compile works no lesse than those of Plinie, Theophrastus, and Aristotle. But I hold not my selfe sufficient, and although I were, yet is not my intent but to note some naturall things which I haue seene and knowne being at the Indies, or have received from men worthy of credit, the which seeme rare to me and scarce known in Europe. By reason whereof I will passe over many of them briefly, ether bicause they are writen of by others, or else require a longer discourse then I can now give.

Chap. ii.—*Of the windes, their differences, properties, and causes in generall.*

Having discoursed in the two former Books of that which concernes the heavens, and the habitation of the Indies in generall, it behooves vs now to treate of the three elements: aire, water, and land, and their compounds, which be mettalls, plants, and beasts; for, as for the fire, I see no speciall matter at the Indies which is not in other regions; vnlesse some will say, that the manner to strike fire in rubbing two stones one against another, as some Indians vse, or to boyle any thing in gourdes, casting a burning stone into it, and other such like things, are remarkable, whereof I have written what might be spoken. But of those which are in the Vulcans[1] and mouths of fire at the Indies, worthy doubtlesse to be observed, I will speake in their order, treating of the diversitie of grounds, whereas they finde these fires or Vulcans. Therefore, to beginne with the winds, I say, that with good reason, Salomon, in the great iudgement

[1] Volcanos.

Lib. iii.

which God had given him, esteemes much the knowledge of the windes, and their properties, being very admirable; for that some are moyst, others drie, some vnwholesome, others sound, some hote, others colde, some calme and pleasant, others rough and tempestuous, some barren, and others fertile, with infinite other differences. There are some windes which blow in certaine regions, and are, as it were, Lordes thereof, not admitting any entry or communication of their contraries. In some partes they blow in that sorte, as sometimes they are Conquerors, sometimes conquered; often there are divers and contrary winds, which doe runne together at one instant, dividing the way betwixt them, sometimes one blowing above of one sort, and another below of another sorte; sometimes they incounter violently one with another, which puts them at sea in great danger: there are some windes which helpe to the generation of creatures, and others that hinder and are opposite. There is a certaine wind, of such a quality, as when it blowes in some country, it causeth it to raine fleas, and in so great aboundaunce, as they trouble and darken the aire, and cover all the sea shoare: and in other places it raines frogges. These diversities, and others which are sufficiently knowne, are commonly attributed to the place by the which these windes passe. For they say, that from these places they take their qualities to be colde, hote, drie, or moyst, sickly, or sound, and so of the rest, the which is partly true, and cannot be denied; for that in a small distance you shall see in one winde many diversities. For example, the Solanus or Easterne winde is commonly hote and troublesome in Spaine; and in Murcia it is the coolest and healthfullest that is, for that it passeth by gardens, and that large champaine which wee see very fresh. In Carthagena, which is not farre from thence, the same winde is troublesome and vnwholesome. The meridionall (which they of the Ocean call South, and those of the Mediterranean sea,

Mezo giorno) commonly is raynie and boisterous, and in the same Citie whereof I speak, it is wholesome and pleasant. Plinie reports that in Affricke it raines with a Northerne winde, and that the Southerne winde is cleere. Hee, then, that shall well consider what I have spoken of these windes, may conceive, that in a smal distance of land or sea one winde hath many and diverse qualities, yea sometimes quite contrary; whereby we may inferre that he draweth his property from the place where he passeth, the which is in such sort true (although we may not say infallibly), as it is the onely and principall cause of the diversitie of the windes. For in a single region containing fiftie leagues in circuite (I putte it thus for an example), it may clearly be seen that the winde which blowes of the one parte is hote and moist, and that which blowes on the other is colde and drie. Notwithstanding this diversitie is not found in places by which it passeth, the which makes mee rather to say that the windes bring these qualities with them, whereby they give vnto them the names of these qualities. For example, we attribute to the Northerne winde, otherwise called Cierço, the property to be colde and drie, and to dissolve mists; to the Southerne wind, his contrary, called Leveche, wee attribute the contrary qualitie, which is moist and hote, and ingenders mists. This being generall and common, we must seeke out another vniversall cause to give a reason of these effects. It is not enough to say that the places by which they passe give them these qualities, seeing that passing by the same places we see contrary effects. So as we must of force confesse that the region of the heaven where they blowe gives them these qualities, as the Septentrionall is colde, because it commes from the North, which is the region farthest from the Sunne. The Southerne, which blows from the Midday or South, is hote, and for that the heate drawes the vapours. It is also moist and raynie, and contrariwise the north is drie

Lib. iii. and subtile, for that it suffereth no vapours to congeale. And in this manner wee may discourse of other windes, giving them the qualities of the region where they blowe. But, looking more precisely into it, this reason can not satisfie me. I will therefore demaund, What doth the region of the aire by which they passe, if it doth not give them their qualities? I speake it for that in Germanie the Southerne winde is hote and moist, and in Affrike the Northerne is cold and drie. Notwithstanding it is most certaine that in what region soever of Germanie the Southerne winde is ingendred, it must needes be more cold then any part of Affrike where the Northerne is ingendred. And if it be so, why is the Northerne winde more cold in Affrike then the Southerne in Germany, seeing it proceeds from a hotter region? Some may answer me that the reason is for that it blowes from the North, which is colde; but this is neither sufficient nor true, for if it were so, whenas the Northerne winde blowes in Affrike, it should also runne and continue his motion in al the Region, even vnto the North, the which is not so. For at one instant there blowe Northerne windes very colde in countries that are in fewer degrees, and Southerne winds, which are very hotte, in countries lying in more degrees, the which is most certaine, vsuall, and well knowne. Whereby (in my opinion) wee may inferre that it is no pertinent reason to say that the places by which the winds do passe give them their qualities, or that they be diversified, for that they blowe from divers regions of the ayre, although the one and the other have some reason, as I have said. But it is needefull to seeke further to knowe the true and originall cause of these so strange differences which we see in the windes. I cannot conceive any other, but that the same efficient cause which bringeth foorth and maketh the winds to grow dooth withall give them this originall qualitie, for in trueth the matter whereon the windes are made, which is no other thing (according to Aristotle) but the

exhalation of the interior Elements, may well cause in effect a great parte of this diversitie, being more grosse, more subtile, more drie, and more moist. But yet this is no pertinent reason, seeing that we see in one region, where the vapours and exhalations are of one sorte and qualitie, that there rise windes and effectes quite contrary. We must therefore referre the cause to the higher and celestiall efficient, which must be the Sunne, and to the motion and influence of the heavens, the which by their contrary motions give and cause divers influences. But the beginnings of these motions and influences are so obscure and hidden from men, and on the other part so mighty, and of so great force, as the holie Prophet David, in his propheticall Spirite, and the Prophet Ieremie, admiring the greatnes of the Lorde, speake thus: "Qui profert ventos de thesauris suis." He that drawes the windes out of his treasures. In trueth these principles and beginnings are rich and hidden treasures, for the Author of all things holdes them in his hand and in his power, and when it pleaseth him sendeth them foorth for the good or chastisement of men, and sends foorth such windes as hee pleaseth, not as that Eolus, whome the Poets doe foolishly faine to have charge of the windes, keeping them in a cave like vnto wild beasts. We see not the beginning of these windes, neyther do we know how long they shal continue, or whither they shal goe. But we see and know well the diverse effects and operations they have, even as the supreame trueth the Author of all things hath taught vs, saying, "Spiritus vbi vult spirat, et vocem eius audis, et nescis vnde venit, aut quo vadit." The spirit or winde blowes where it pleaseth, and although thou feelest the breath, yet doost thou not knowe whence it commeth, nor whither it shall goe. To teach vs that conceiving a little of matters which are present and common vnto vs, wee should not presume to vnderstand that which is so high and so hidden as the causes and motives of the Holy Ghost. It

Lib. iii.

Psalme cxxxiv. Ieremy. x.

Lib. iii. is therefore sufficient that wee knowe his operations and effectes, the which are plainely discovered in his greatnes and perfections, and to have treated a litle philosophically of the windes, and the causes of their differences, properties, and operations, which wee have produced into three; the place by which they passe, the regions where they blowe, and the celestiall virtue, the beginning and motive of the windes.

Chap. iii.—*Of certaine properties of windes which blowe at the new worlde.*

It is a question much disputed by Aristotle, whether the Southerne winde, which we call *Abrego* or *Levecche* blowes from the pole Antartike, or onely from the Equinoctiall line? which is properly to demaund, if beyond the Equinoctiall it holde the same qualitie of hote and rainie as we see here. It is a point whereof we may with reason stand in doubt, for although it passe the Equinoctiall, yet is it still the Southerne wind, seeing it comes from the same parte of the worlde; as the Northerne winde which comes to the contrary continues stil the same winde, although it passe the burning Zone and Equinoctiall line. And it seems hereby, that these two windes should hold their first properties, the one to be hote and moist, the other colde and drie; the South to breede mists and raine, and the North to disperse them, and to make a cleere Skie. Notwithstanding Aristotle leanes to the contrary opinion, for that in Europe the Northerne winde is colde, because it comes from the Pole, a region extreamely colde, and the Southerne winde contrariwise is hotte, because it comes from the South, which is the region the Sunne dooth most heate. By this reason then we should believe that the South winde should be colde to them that inhabite on the other side of the line, and the

Northerne wind should be hote, for in those partes the Southerne wind comes from the Pole, and the Northerne from the Line. And though it seemes by this reason that the Southern winde should be more colde there than the Northern is heere, for that they holde the region of the South Pole to be more colde then that of the North, by reason that the Sunne stayeth seaven dayes every yeere in the Tropike of Cancer more than it doth in the Tropicke of Capricorne, as it appeareth by the Equinoxes and Solstices he makes in the two Circles, wherein it seemeth that Nature would shew the preheminence and excellencie of this moity of the worlde, which is in the North, above the other parte in the South; so as it seemeth there is reason to beleeve that these qualities of the windes doe change in passing the Line; but in trueth it is not so, as I could comprehend by the experience I had some yeeres, being in those partes of the Indies which lie on the South, or the other side of the Line.

It is true that the Northerne winde is not vsually colde and cleere there as heere. In some parts of Peru, as at Lima, and on the Plaines, they find the Northern windes troublesome and vnwholesome, and all along the coast, which runs above five hundred leagues, they holde the Southerne windes for healthfull and coole, and (which is more) most cleere and pleasant; yea it never raines, contrary to that wee see in Europe, and of this side the Line. Yet that which chaunceth vpon the coast of Peru is no generall rule, but rather an exception and a wonder of Nature, neuer to raine vpon that coast, and ever to have one winde, without giving place to his contrary, whereof we will heereafter speake our minde.

Now let vs stand vpon this point, that the Northerne winde beyond the line hath not the same properties which the Southerne winde hath on this side, although they both blow from the midday to regions and parts of the world

Lib. III.

which be opposite and contrarie. For it is no generall rule there, that the Northerne winde is neither hote nor rainie there, as the South winde is on this side; but contrariwise, it raines whenas the South winde blowes there, as we see in all the Sierra or mountaine of Peru, in Chile, and in the Countrie of Congo, which is on the other side of the line, and farre advanced into the Sea. And in Potosi likewise, the winde which they call Tomahaui (which is our North), if my memorie faile me not, is extreamely cold, drie, and vnpleasant, as it is heere with vs. Yet doth not the Northerne winde disperse the cloudes usually there as it doth heere; but contrariwise, if I be not deceived, it doth often cause raine. There is no doubt but the windes do borrow this great diversitie of contrarie effects from the places by which they passe, and the neere regions where they are bred, as we see by daily experience in a thousand places. But speaking in generall of the qualitie of the windes, we must rather look to the coastes or partes of the world from whence they proceede, then to observe whether they be on this side or beyond the line, as it seemes the Philosopher held opinion. These capitall windes, which be the East and West, have no such vniversall qualities, nor so common in this continent nor in the other as the two former. The Solanus, or Easterne winde, is commonly here troblesome and vnholsome, and the Westerne, or Zephirus, is more milde and healthfull. At the Indies, and in all the burning Zone, the Easterne winde which they call Brisa, is contrariwise very healthfull and pleasant. Of the West, I cannot speak any thing certaine or generall, for that it blowes not at all, or very seldome, in the burning Zone, for in all the navigation betwixt the two Tropikes, the Easterne winde is ordinary. And for that it is one of the admirable workes of Nature, it shall be good to vnderstand the cause and the beginning thereof.

Chap. iv.—*That in the burning Zone, the Brisas, or Easterly windes, do continually blowe, and without the Zone the westerne, and that the Easterly are ordinarie alwaies there.*

The waies at Sea are not as at Land, to returne the same way they passe. It is all one way, saieth the Philosopher, from Athens to Thebes, and from Thebes to Athens; but it is not so at Sea, for we go one way, and returne by another. The first which discovered the east and west Indies, laboured much with great difficultie to finde out their course, vntill that Experience (the mistris of these secrets) had taught them, that to saile through the Ocean is not like the passage in Italie, through the Mediterranean sea, where, in their returne, they observe the same Ports and Capes they had sight of in their passage, attending still the benefite of the winde, which changeth instantly, and when that failes, they have recourse to their owers; and so the Gallies go and come daily, coasting along the shoare. In some partes of the Ocean, they may not looke for any other winde then that which blowes, for that commonly it continues long. To conclude, that which is good to go by, is not fit to returne with: for in the sea beyond the Tropicke, and within the burning Zone, the Easterly windes raine continually, not suffering their contraries. In the which region, there are two strange things: the one is, that in that Zone (being the greatest of the five into the which the world is divided) the Easterly windes (which they call Brisas) do raine, not suffering the Westerne or Southerne (which they call lower windes), to have their course at any season of the yeere: The other wonder is, that these Easterly windes never cease to blow, and most commonly in places neerest to the line, where it seemes that calmes should be more frequent, being a part of the world most subiect to the heate of the Sunne;

Lib. iii.

Iuan. de Barros in Decade i, lib. iv, ca. 6.

Lib. iii.

but it is contrarie, for you shall hardly finde any calmes there, and the winde is cold and continues longer, which hath been found true in all the navigations of the Indies. This is the reason why the voyage they make from Spaine to the West Indies is shorter, more easie, and more assured, then the returne to Spaine. The fleetes, parting from Seville, have more difficultie to passe the Canaries, for that the gulph of Yeguas is variable, being beaten with divers windes; but having passed the Canaries, they saile with a westerne winde vntill they come to the burning Zone, where presently they finde an Easterly winde, and so they saile on with full windes, so as they have scant any neede to touch their sailes in the whole voiage: for this reason they called this great gulph the gulph of Damas, for the calmenes and pleasantnes thereof. Then, following their course, they come to the Ilands of Guadalupe, Dominica, Deseada, Marigalante, and the rest, which in that place be, as it were, the suburbs of the Indies. There the fleetes seperate and divide themselves, whereof some (which go to New Spaine) take to the right hand towards Hispaniola, and having discovered Cape San Anton, they passe vnto San Juan de Lua, alwaies vsing the same Easterly windes. Those for the maine Land take the left hand, discovering the high mountaine of Tayrona; then, having touched at Carthagena, they passe vnto Nombre de Dios, from whence they go by land to Panama, and from thence by the South Sea to Peru. But when the fleetes returne to Spaine, they make their voiage in this sort: The fleete of Peru discovers Cape San Anton, then they enter into the Havana, which is a goodly Port in the Iland of Cuba. The fleete of New Spaine doth likewise touch at the Havana, being parted from Vera Cruz, or from the Iland of San Juan de Lua, the which is not without difficultie, for that commonly Easterly windes blowe there, which is a contrarie winde to go to the Havana. These fleetes being

ioyned together for Spaine, they seeke their height without the Tropicks, where presently they finde Westerly winds, which serve them vntill they come in view of the Açores or Terceras, and from thence to Seville. So as their voiage in going is of a small height, not above twentie degrees from the line, which is within the Tropickes. But the returne is without the Tropickes, in eight and twentie or thirtie degrees of height at the least, for that within the Tropickes the Easterne winds continually blow, the which are fittest to go from Spaine to the West Indies, for that their course is from east to west; and without the Tropickes (which is in three and twentie degrees of height) they finde westerly winds, the which are the more certaine and ordinarie, the farther you are from the line, and more fit to returne from the Indies; for that they are windes blowing from the South and West, which serve to runne into the East and North. The like discourse is of the Navigation made into the South sea, going from New Spaine or Peru to the Philippines or China, and returning from the Philippines or China to New Spaine, the which is easie, for that they saile alwaies from East to West neere the line, where they finde the Easterly windes to blow in their poope. In the yeere 1584, there went a shippe from Callao in Lima to the Philippines, which sailed 2000 and 700 leagues without sight of land, and the first it discovered was the Iland of Lusson, where they tooke port, having performed their voiage in two moneths, without want of winde or any torment, and their course was almost continually vnder the line; for that from Lima, which is twelve degrees to the South, he came to Manilla, which is as much to the North. The like good fortune had Alvaro de Mandana, whenas he went to discover the Ilands of Salomon, for that he had alwaies a full gale, vntill he came within view of these Ilands, the which must be distant from that place of Peru, from whence he parted, about a thousand leagues, having runne their course alwaies

Lib. iii.

in one height to the South. The returne is like vnto the voiage from the Indies vnto Spaine, for those which returne from the Philippines or China to Mexico, to the end they may recover the Westerne windes, they mount a great height, vntill they come right against the Ilands of Iappon, and, discovering the Caliphornes, they returne by the coast of New Spaine to the port of Acapulco, from whence they parted. So, as it is proved likewise by this navigation, that they saile easily from East to West within the Tropickes, for that there Easterly windes do raine; but returning from West to East they must seeke the Westerne windes without the Tropickes in the height of seven and twentie degrees. The Portingales prove the like in their navigations to the East Indies, although it be in a contrarie course, for that going from Portugall the voiage is troublesome, but their returne is more easie; for that in going their course is from the West to the East, so as they must of necessitie mount, vntill they have found their generall windes, which they hold to be above the seven and twentith degree. And in their returne they discover the Terceras, but with more ease, for that they come from the East, where the Easterly or Northerne windes do serve them. Finally, the Mariners hold it for a certaine rule and observation that within the Tropickes continually raine Easterly windes, and therefore it is very easie to saile to the West. But without the Tropickes there are in some seasons Easterly windes, and in some and more ordinarie Westerne windes, by reason whereof they which saile from West to East labour alwaies to be out of the burning Zone, to put themselves in the height of seven and twentie degrees. And for this reason men have indangered themselves to vndertake strange Navigations, and to seeke out farre Countries vnknowne.

Chap. v.—*Of the differences of the Brisas or Easterne windes, and the Westerne, and likewise of other windes.*

Lib. iii.

Although that which we have spoken be generall and well approoved, yet there remaines still a desire in me to learne the cause of this secret, why vnder the burning Zone we saile alwaies from East to West with so great facilitie, and not from West to East, which is as much as if wee should demaund why the Easterly windes raine there, and not the Westerly, for that according to good Philosophie that which is perpetuall, vniversall, and of it selfe (ãs the Philosophers say), must have a proper cause and of it selfe. But before I stay at this question, which seemes remarkeable, it shal be necessary to shew what we vnderstand by Brisas or Easterly windes and Westerly, for that it will serve much for this subiect, and for many other matters touching windes and navigations. The Pilotes make two and thirty poynts of windes, for that to bring their ship to the desired haven they must make their account as punctually and as strictly as they can, for bending to the one side or the other never so little, in the end of their course they should finde themselves farre from their pretended place. And they reckon but two and thirty quarters of the windes, for that more woulde confound the memorie. But with reckoning as they accompt two and thirty windes, so may they reckon three score and foure, one hundred twenty and eight, and two hundred fifty and six. Finally, multiply these partes to an infinite, for the place where the shippe is, being as it were the centre, and all hemisphere in circumference, what should let but wee may accompt lines without number, the which comming from this centre drawe directly to these lineall circles in so many partes, which might cause as many diverse windes, seeing that the winde comes from all partes of the hemisphere, which we may divide into as

many partes as we will imagine, yet the wisdome of man, conformable to the holy Scripture, observes foure windes, the principall of all others, and as it were the foure corners of the worlde, the which they ioyne in making a crosse with two lines, whereof the one goes from one Pole to another, and the other from one Equinoctiall to the other. Of the one side the North or Aquilon, and the Southerne winde or mid-day opposite, and on the other side the East, which comes from the Sunne rising, and the West from his setting. And although the holy Scripture in some places speakes of other diversities of windes, as of Eurus and Aquilon, which those in the Ocean sea call Nordest, and they of the Mediterranean sea Gregal, whereof there is mention made in Saint Paul's navigation, yet the same holy Scripture makes mention of those foure notable windes, which all the worlde knowes, which are, as is saide, North, South, East, and Weast.

But for that we finde three differences in the rising of the Sunne, from whence the name of East comes, that is the two greatest declinings which he doth vsually make, and the meane betwixt them both, as hee dooth rise in diverse places in winter, in summer, and in that which holdes the middle of these two seasons. For this reason they have reckoned two other windes, the East of summer and the East of winter, and by consequence two Wests, the one of summer and the other of winter, their contraries, so as there are eight windes in eight notable poyntes of heaven, which are the two Poles, the two Equinoxes, the two Solstices, and their opposites in the same Circle, the which are called by divers names and appellations in every place of the sea and land. Those which saile the Ocean doe vsually call them thus. They give the name of North to those windes that blowe from our Pole, which carrieth the same name, and Northeast that which is neerest, and comes from the summer East. They call East that which comes

directly from the rising Equinoctiall, and Southeast that which comes from the winter rising. To the Mid-day or Pole Antartike they give the name of Southwest, and to that of the winters setting the name of Southwest; to the right setting Equinoctiall the name of West, and to the summers setting Northwest. They divide amongst them the rest of the winds, and give them their names as they participate and approach to others, as North-northwest, North-northeast, East-northeast, East-southeast, South-southwest, West-southwest, West-norwest, so as by their names we know whence they proceed. In the Mediterranean sea, although they follow the same division and maner of reckoning, yet doe they give them other different names. They call the North Tramontana, and his contrary, the South, Mezogiorno or Mediodia. The East they call Levante, and the West Poniente, and those which crosse these foure they call thus: Southeast is by them named Xirocque, or Xaloque, and his opposite, which is Norwest, they call Mestral. The northeast they call Gregal, and the Southwest his contrary, Levesche, Lybico, or Affricaine. In Latine the foure knowne winds be Septentrio, Auster, Subsolanus, Favonius, and those which be interlaced are Aquilo, Vulturnus, Affricus, and Corus. According vnto Plinie, Vulturnus, which Eurus is the same winde as Southeast or Xaloque. Favonius is the West or Ponent, Aquilo and Boreas is Nortest or Gregal, or Tramontana, Affricus, and Libique is the Southwest or Levesche, Auster and Notus is the South or Midday, Corus and Zephirus the Northwest or Mestral, and to the Northeast or Gregal they give no other name then Phenicias. Some divide them after an other maner, but for that it is not now our purpose to repeate the Latine and Greeke names of all the windes; lette vs onely shew which be those amongst these windes that the Mariners of the Indian Ocean call Brisas and which Vendavales. I was long in some difficulty about these names, seeing them

Lib. iii.

to vse them very diversly, vntill I found that these names were more generall then proper and peculiar. They call Brisas those which serve to goe to the Indies, the which blowe in their poope, which by this meanes comprehend all the Easterly windes, and those which depend of them. And they do call Vendavales those which are fitte to returne from the Indies, which blowe from the South to the west, so as they be, as it were, two Esquadrons of windes of eyther side; the Corporalles be of one side Northeast or Gregal, on the other Southwest or Leveche. But you must vnderstand that of the number of eight windes and differences which we have counted, five are proper to saile by, and not the other three. I say that when a ship sailes at sea he may make a long voyage with one of these windes, although they serve him not equally, but he cannot vse any of the other three. As if a shippe goe to the South he shall saile with the North, Northeast, Northweast, and with East and Weast, for side-windes serve to goe or to come. But with a Southerne wind he cannot saile, being directly contrary, nor with his two Collaterals, which is Southest and Southwest, which is a very triviall thing, and common to them that saile. And therefore it is not needefull to explaine them heere, but to signifie that the side-windes of the right East are those which commonly blow to the burning Zone, which they doe call Brisas, and those from the South declining to the Weast, which serve to saile from West to East, are not common in the burning Zone, and therefore they seeke them without the tropikes; and the Indian Mariners commonly call them Vendavales.

Chap. vi.—*What is the reason why sailing vnder the burning Zone we finde alwayes Easterly windes?*

Let vs now speake of that which toucheth the Question propounded: what should be the reason whie vnder the burning Zone wee saile easily from East to West, and not contrary? wherein we must presuppose two certaine groundes. The one is, that the motion of the first moover, which they call Diurnall, not onelie drawes and mooves with him the celestiall spheares, which are inferiour vnto him, as wee see daily in the sunne, the moone, and the starres, but also the Elements do participate of this motion, insomuch as they are not hindered. The earth is not mooved, by reason of her heavinesse, which makes it immooveable, being far from this first motor. The element of water moves not likewise with this Diurnall motion, for that it is vnited to the earth and make one sphere, so as the earth keeps it from all circular motion. But th'other two elements of fire and aire are more subtil and nearer the heavenly regions, so as they participate of their motion, and are driven about circularly as the same celestial bodies. As for the fire, without doubt it hath his sphere (as Aristotle and other Philosophers have held), but for the aire (which is the point of our subiect) it is most certaine that it mooves with a motion diurnall, which is from East to Weast, which we see plainely in Comets that moove from the East vnto the West, mounting, descending, and finally turning in the hemispheare in the same sort as the Starres move in the firmament; for otherwise these comets being in the region and sphere of the aire, whereas they ingender, appeares consum'd. It should be impossible for them to moove circularly, as they doe, if the element of the aire doth not moove with the same motion that the first motor dooth. For these elements being of a burning substance, by reason

they should be fixt, without mooving circularly, if the sphere where they are did not moove; if it be not as we faine, that some Angell or intellectuall Spirite dooth walke with the Comet, guiding it circularly. In the yeere of our Lord God one thousand five hundred seaventy and seaven appeered that wonderfull Comet (in forme like vnto a feather) from the horizon almost to the middest of heaven, and continued from the first of November vntil the eight of December. I say from the first of November, for although in Spaine it was noted but the ninth of November (according to the testimony of Writers of that time), yet at Peru, where I was then, I remember well we did see it and observe it eight dayes before, and all the time after. Touching the cause of this diversity (some may dilate vpon it particularly) I will onely show that during those fourtie dayes which it continued we all observed (both such as were in Spaine and we that lived then at the Indies) that it mooved daily with an vniversall motion, from East to Weast, as the Moone and other Planets, wherby it appeeres that the sphere of the aire being its Region, the element it selfe must of necessitie moove after the same sort. We noted also, that besides this vniversall motion it had an other particular, by which it moved with the planets fro west to east, for every night it turned more Eastward, like vnto the Moone, Sunne, and Planet of Venus. Wee did also observe a third particular motion, whereby it mooved from the zodiacke towards the North; for after some nights it was found nearer vnto the Septentrionall signes. And it may be this was the reason why the great Comet was sooner seene by those that were southerly, as at Peru, and later discovered by them of Europe; for by this third motion (as I have saide) it approached neerer the Northerne Regions. Yet every one may well observe the differences of this motion, so, as wee may well perceive, that many and sundry celestiall bodies give their impressions to the sphere of the aire. In like

sorte it is most certaine that the ayre mooves with the circular motion of the heaven, from Est to West, which is the first ground before mentioned. The second is no lesse certaine, the which is, that the motion of the aire in those parts that are vnder the Line, or neere vnto it, is very swift and light the more it approacheth to the Equinoctiall; but the farther off it is from the Line, approaching neere the Poles, the more slowe and heavie this motion is. The reason heereof is manifest, for that the mooving of the celestiall bodies being the efficient cause of the mooving of the ayre, it must of necessitie be more quicke and light, where the celestiall bodies have their swiftest motion.

To labour to shew the reason why the heaven hath a quicker motion vnder the burning Zone, which is the Line, then in any other part of the heaven, were to make small account of men; seeing it is easie to see in a wheele that its motion is more slowe and heavy in the part of greatest circumference then in the lesse, and that the greater circumference ends at one instant with the lesser. From these two grounds proceedes the reason where such as saile great gulphs from east to west doe always finde the winde in their poope, going in a small altitude, and the neerer they come to the Equinoctiall, the more certaine and durable the winde is. And contrariwise, sailing from west to east, they always finde the winde contrary; for that the swift motion of the Equinoctiall drawes after it the element of the aire, as it doth the surplus of the higher spheares. So as the aire dooth alwayes follow the motion of the day, going from east to weast, without any alteration and the motion of the aire being swift, draweth after it all the vapours and exhalations which rise from the sea, which causeth in those Regions a continuall easterly winde, which runnes from the Levant. Father Alonso Sanchez, a religious man of our Company, who hath travelled the east and west Indies, as a man ingenious and of experience, said, that sailing

Lib. iii. vnder the Line or neere vnto it, with a continued and durable season, it seemed to him to be the same aire, mooved by the heaven the which guided the ships, and was not properly a winde nor exhalation, but an aire moved with the daily course of the sunne; for proofe whereof he shewed that the season is alwayes equall and alike at the gulph of Damas, and in other great gulphes where wee saile vnder the burning Zone, by reason whereof their sailes always bear an equal strain, without its being needful to trim them in all their voyage. And if the ayre were not mooved by the heavens, it might sometimes faile, sometimes change to the contrary, and sometimes there would grow some stormes. Although this be learnedly spoken, yet can we not deny it to be a winde, seeing there are vapours and exhalations of the sea, and that we sometimes see the Brisa or easterly winds stronger, sometimes more weake, and placed in that sort as sometimes they can hardly carry all their sailes. We must then know (and it is true) that the aire mooved, draweth vnto it the vapours it findes; for that the force is great and findes no resistance, by reason whereof the easterne and weasterne windes are continuall, and in a maner alwayes alike, in those parts which are neere the Line, and almost vnder all the burning zone, which is the cause the Sunne followes betwixt the two circles of Cancer and Capricorne.

Chap. vii.—*Why without the Zone, in a greater altitude, wee finde alwayes westerly windes.*

Whoso would neerely looke into what hath bin spoken may likewise vnderstand that going from the west to the east, in altitude beyond the Tropikes, we shall finde westerne windes, for that the motion of the Equinoctiall being so swift, it is a cause that the ayre mooveth vnder it accord-

ing to this motion, which is from east to west, drawing after it the vapors and exhalations that rise of either side the Equinoctial or burning zone, incountring the course and motion of the zone, are forced by the repercussion to returne almost to the contrary, whence growe the southwest winds so ordinary in those parts. Even as we see in the course of waters, the which (if they be incountred by others of more force) returne in a maner backe, so it seemes to be like in vapours and exhalations, whereby it growes that the windes doe turne and separate themselves from one part to another. These westerly winds do commonly raine in a meane altitude, which is from twenty and seeven to thirty and seven degrees, though they be not so certaine nor so regular as the Brisas that are in a lesse altitude. The reason is, for that the south-west windes are no causes of this proper and equal motion of the heaven, as the Brisas are, being neere to the Line. But (as I have said) they are more ordinarie, and often more furious and tempestuous. But passing into a greater latitude, as of fortie degrees, there is as small assurance of windes at sea as at land; for sometimes the east or north winde blowes, and sometimes the south or west; whereby it happeneth their navigations are more vncertaine and more dangerous.

Chap. viii.—*Of the exceptions to the foresaid Rules, and of the Windes and Calmes, both at Land and at Sea.*

That which we have spoken of winds which blow ordinarilie within and without the Zone, must be vnderstood of the maine Sea and in the great gulphes; for at land it is otherwise, where we finde all sorts of windes, by reason of the inequalitie which is betwixt the mountaines and the vallies; the great number of Rivers and Lakes, and the divers scituations of Countries, whence the grosse and

Lib. iii.

thicke vapors arise, which are moved from the one part or the other, according to the diversitie of their beginnings, which cause these divers windes the motion of the aire, caused by the heaven having not power enough to draw and move them with it. And this varietie of windes is not onely found at land, but also vpon the sea coast, which is vnder the burning Zone, for that there be foraine or land windes which come from the land, and many which blow from the sea; the which windes from the sea are commonly more wholesome and more pleasant then those of the land, which are contrariwise, troublesome and vnwholsome, although it be the difference of the coast that causeth this diversitie; commonly the land windes blow from mid-night to the sunne rising, and the sea windes vntill sunne setting. The reason, perhaps, may be, that the earth, as a grosse substance, fumes more whenas the sunne shines not vpon it, even as greene wood, or scarce drie, smoakes most when the flame is quenched. But the sea, which is compounded of more subtile partes, engenders no fumes but when it is hote, even as straw or haie, being moist and in small quantitie, breedes smoake when it is burnt, and when the flame failes, the fume suddenly ceaseth. Whatsoever it be, it is certaine that the land winde blowes by night, and that of the sea by day. So that even as there are often contrarie, violent, and tempestuous windes vpon the sea coast, so do we see very great calmes. Some men of great experience report, that having sailed many great passages at sea vnder the line, yet did they never see any calmes, but that they alwaies make way little or much, the aire being moved by the celestiall motion, which is sufficient to guide a ship, blowing in poope, as it doth. I have already said that a ship of Lima going to Manilla sailed two thousand seven hundred leagues, alwaies vnder the line, or not above twelve degrees from it, and that in the moneths of Februarie and March, whenas the sunne is there for Zenith, and in all this

space they found no calmes, but alwaies a fresh gale, so as in two moneths they performed this great voyage. But in the burning Zone and without it you shall vsually see great calmes vpon the coastes, where the vapors come from the Ilands or maine land. And therefore stormes and tempestes, and the suddaine motions of the aire, are more certaine and ordinarie vpon the coastes, whereas the vapors come from the land, then in full sea, I meane under the burning Zone, for without it, and at sea, there are both calmes and whirlewindes. Notwithstanding, sometimes betwixt the two Tropickes, yea, vnder the line, you shall have great raine and suddaine showers, yea, farre into the sea; for the working whereof the vapors and exhalations of the sea are sufficient, which moving sometimes hastily in the aire, cause thunder and whirlewindes; but this is more ordinarie neere to the land and vpon the land. When I sailed from Peru to New Spaine I observed that all the time we were vpon the coast of Peru our voiage was (as it was ordinary) very calme and easie, by reason of the Southerne winde that blowes, having alwaies a fore winde returning from Spaine and New Spaine. As we passed the gulph, lanching farther into the sea, almost vnder the line, we found the season coole, quiet, and pleasant, with a full winde, but comming neere to Nicaragua, and to all that coast, we had contrarie windes, with great store of raine and fogges. All this navigation was vnder the burning Zone; for from twelve degrees to the South, which is Lima, wee sailed to the seventeenth, which is Gautulco, a port of New Spaine; and I beleeve that such as have observed their navigations, made vnder the burning Zone, shall finde what I have said, which may suffice for the windes which raine at sea vnder the burning Zone.

Chap. ix.—*Of some mervellous effects of the windes, which are in some partes of the Indies.*

Lib. iii.

It were a very difficult matter to report particularly the admirable effectes which some windes cause in divers regions of the world, and to give a reason thereof. There are windes which naturally trouble the water of the sea, and makes it greene and blacke, others cleere as Cristall; some comfort and make glad, others trouble and breede heavines. Such as nourish silkewormes have great care to shut their windowes whenas the South-west windes do blow, and to open them to the contrarie; having found by certaine experience that their wormes diminish and die with the one and fatten and become better with the other; and who so will neerely observe it shall finde in himself that the diversities of windes cause notable impressions and changes in the bodie, principally in sicke partes and ill disposed, when they are most tender and weake. The holy scripture calleth one a burning winde, another a winde full of dew and sweetnes. And it is no wonder if we see such notable effects of the windes in plants, beasts, and men, seeing that we see it visibly in yron, which is the hardest of all mettalls. I have seene grates of yron in some partes of the Indies so rusted and consumed that, pressing it betwixt your fingers, it dissolved into powder, as if it had been hay or parched straw, the which proceedes only from the winde which doth corrupt it, having no meanes to withstand it. But leaving apart many other great and notable effects, I will onely make mention of two. The one, although it causeth pangs greater than death it selfe, yet doth it not breede any further inconvenience. The other takes away life without feeling of it. The sicknes of the sea, wherewith such are troubled as first begin to go to sea, is a matter very ordinary; and yet if the nature thereof were vnknowne to men, we should

Ex., c. 10 and 14. Iob xxvii. Ion iv. Ose. 1, 3. Dan. iii.

take it for the pangs of death, seeing how it afflicts and torments while it doth last, by the casting of the stomacke, paine of the head, and other troublesome accidents. But in trueth this sicknes, so common and ordinarie, happens unto men by the change of the aire and sea. For although it be true that the motion of the shippe helpes much, in that it moves more or less, and likewise the infections and ill savours of things in the shippe; yet the proper and naturall cause is the aire and the vapors of the sea, the which doth so weaken and trouble the body and the stomacke, which are not accustomed therevnto, that they are wonderfully moved and changed; for the aire is the element by which wee live and breathe, drawing it into our entrailes, the which we bathe therewithall. And therefore there is nothing that so suddenly and with so great force doth alter vs, as the change of the aire we breathe, as we see in those which die of the plague. It is proved by many experiences, that the aire of the sea is the chiefe cause of this strange indisposition; the one is, that when there blowes from the sea a strong breath, we see them at the land as it were sea-sicke, as I myselfe have often found. Another is, the farther we go into the sea, and retyre from land, the more we are touched and dazeled with this sicknes. Another is, that coasting along any Iland, and after lanching into the maine, we shall there finde the aire more strong. Yet will I not deny, but the motion and agitation may cause this sicknes, seeing that we see some are taken therewith passing rivers in barkes: others in like sort going in coches and carosses, according to the divers complexions of the stomacke; as contrariwise, there are some, how boistrous and troublesome soever the sea be, doe never feele it. Wherefore it is a matter certaine and tried that the aire of the sea doth commonly cause this effect in such as newly go to sea. I thought good to speake this, to shew a strange effect, which happens in some partes of the

Indies, where the ayre and the wind that rains makes men dazie, not lesse, but more then at sea. Some hold it for a fable, others say that it is an addition; for my part I will speake what I have tried. There is in Peru a high mountaine which they call Pariacaca,[1] and having heard speake of the alteration it bred, I went as well prepared as I could according to the instructions which were given me, by such as they call Vaguianos, or expert men; but notwithstanding all my provision, when I came to mount the stairs, as they call them, which is the top of this mountaine, I was suddenly surprized with so mortall and strange a pang that I was ready to fall from my beast to the ground; and although we were many in company, yet every one made haste (without any tarrying for his companion) to free himselfe speedily from this ill passage.[2] Being then alone with one Indian, whom I intreated to keep me on my beast, I was surprised with such pangs of straining and casting as I thought to cast vp my soul too; for having cast vp meate, fleugme, and choller, both yellow and greene, in the end I cast vp blood, with the straining of my stomacke. To conclude, if this had continued, I should vndoubtedly have died; but this lasted not above three or four houres, that we were come into a more convenient and naturall temperature, where all our companions, being fourteene or fifteene, were much wearied. Some in the passage demaunded confession, thinking verily to die; others got off their beasts, beeing overcome with casting, and going to the stoole; and it was tolde me that some have lost their lives there with this accident. I beheld one that did beate himselfe against the earth, crying out for the rage and griefe which this passage of Pariacaca hadde caused. But commonly it

[1] *Cacca* means a rock in Quichua. I cannot, with certainty, identify this pass of *Pariacacca*.

[2] The sickness, at great heights in the Andes, caused by rarified atmosphere, is called *Sorochi*.

dooth no important harme, onely this, paine and troublesome distaste while it endures: and not onely the passage of Pariacaca hath this propertie, but also all this ridge of the mountaine, which runnes above five hundred leagues long, and in what place soever you passe, you shall finde strange intemperatures, yet more in some partes then in other, and rather to those which mount from the sea than from the plaines. Besides Pariacaca, I have passed it by Lucanas[1] and Soras;[2] in another place, by Collahuas,[3] and by Cavanas.[4] Finally, by foure different places, going and comming, and alwaies in this passage I have felt this alteration, although in no place so strongly as at the first in Pariacaca, which hath beene tried by all such as have passed it. And no doubt but the winde is the cause of this intemperature and strange alteration, or the aire that raignes there. For the best remedy (and all they finde) is to stoppe their noses, their eares, and their mouthes, as much as may be, and to cover themselves with cloathes, especially the stomacke, for that the ayre is subtile and piercing, going into the entrailes, and not onely men feele this alteration, but also beasts, that sometimes stay there, so as there is no spurre can make them goe forward. For my part, I holde this place to be one of the highest parts of land in the worlde, for we mount a wonderfull space. And in my opinion, the mountaine Nevada of Spaine, the Pirenees, and the Alpes of Italie, are as ordinarie houses in regard of hie Towers. I therefore perswade my selfe, that the element of the aire is there so subtile and delicate, as it is not proportionable with the breathing of man, which requires a more grosse and temperate aire, and I beleeve it is the

[1] More correctly *Rucana*. See also Lib. vi, cap. xv; and *G. de la Vega*, ii, p. 267. Lucanas is a modern province in the department of Ayacucho.

[2] *Soras*, a district near Lucanas.

[3] *Collahua* is near Arequipa. See *G. de la Vega*, i, p. 232.

[4] *Cariña*. See *G. de la Vega*, i, p. 80.

Lib. III.

cause that doth so much alter the stomacke and trouble all the disposition. The passages of the mountaines Nevada and others of Europe which I have seene, although the aire be colde there, and doth force men to weare more clothes, yet this colde doth not take away the appetite for meat, but contrariwise it provokes; neither dooth it cause any casting of the stomacke, but onely some paine in the feete and handes. Finally, their operation is outward. But that of the Indies, whereof I speake (without molesting of foote or hand, or any outward parte), troubles all the entrailes within: and that which is more admirable, when the sunne is hote, which maketh mee imagine that the griefe wee feele comes from the qualitie of the aire which wee breathe. Therefore, that is most subtile and delicate, whose colde is not so sensible as piercing. All this ridge of mountains is for the most part desart, without any villages or habitations for men, so as you shall scarce finde any small cotages to lodge such as do passe by night. There are no beasts, good or bad, but some *vicuñas*, which are their countrey muttons, and have a strange and wonderful property, as I shall shew in his place.[1] The grasse is often burnt, and all blacke with the aire, and this desart runnes five and twenty or thirty leagues overthwart, and in length above five hundred leagues. There are other desarts or places not inhabited, which at Peru they call *Punas*[2] (speaking of the second poynt we promised), where the quallitie of the ayre cutteth off mans life without feeling. In former time the Spaniardes went from Peru to the realme of Chille by this mountaine, but at this day they do passe commonly by sea, and sometimes alongst the side of it. And though that way be laborious and troublesome, yet is there not so great daunger as by the mountaine, where there are plaines, on the which many men have

[1] Lib. IV, cap. xli.

[2] *Punas* are the lofty plateaux of the Andes.

perished and died, and sometimes have scaped by great happe, whereof some have remained lame. There runs a small breath, which is not very strong nor violent, but proceedes in such sorte that men fall downe dead in a manner without feeling, or, at the least, they loose their feete and handes; the which may seeme fabulous, yet is it most true.

I knew and was long intimate with General Geronimo Costillas,[1] one of the first settlers in Cusco, who had lost three or foure toes, which fell off in passing the desart of Chile, being perished with this aire, and when he came to look on them they were dead, and fell off without any paine, even as a rotten apple falleth from the tree. This Captaine reported, that of a good army which hee had conducted by that place in the former yeeres, since the discoverie of this kingdome by Almagro, a great part of the men remained dead there, whose bodies he found lying in the desart without any stink or corruption; adding therevnto one thing very strange, that they found a yong boy alive, and being examined how hee had lived in that place, hee saide that hee laie hidden in a little cave, whence hee came to cutte the flesh of a dead horse with a little knife, and thus had he nourished himselfe a long time, with I know not how many companions that lived in that sort, but now they were all dead, one dying this day, and another to morrow, saying that hee desired nothing more then to die there with the rest, seeing that he found not in himselfe any disposition to goe to any other place, nor to take any taste in any thing. I have vnderstoode the like of others, and particularly of one that was of our company, who being then a secular man, had passed by these desarts; and it is a

[1] Geronimo Costillas was a native of Zamora, of good family. He accompanied Almagro's expedition to Chile; and was afterwards actively engaged in the campaign against Giron. See *G. de la Vega*, ii, p. 243 and *note*.

Lib. iii.

strange thing the qualitie of this colde aire, which killes and also preserves the dead bodies without corruption. I have also vnderstoode it of a reverend religious man, of the Order of Saint Dominike, and Prelate thereof, who hadde seene it passing by the desarts; and which is strange, hee reported, that travelling that way by night, was forced to defend himselfe against that deadly winde which blowes there (having no other meanes) but to gather together a great number of those dead bodies that lay there, and made therof, as it were, a rampire and a bolster for his head; in this manner did he sleepe, the dead bodies giving him life. Without doubt this is a kinde of cold so piercing that it quencheth the vitall heate, cutting off his influence, and, being so exceeding colde, yet doth not corrupt nor give any putrifaction to the dead bodies, for that putrifaction groweth from heate and moystness. As for the other kinde of ayre which thunders vnder the earth, and causeth earthquakes, more at the Indies then in any other regions, I wil speake thereof in treating the qualities of the land at the Indies. We will content our selves now with what wee have spoken of the wind and aire, and passe to that which is to be spoken of the water.

Chap. x.—*Of the Ocean that invirons the Indies, and of the North and South Seas.*

Amongst all waters the Ocean is the principall, by which the Indies have beene discovered, and are invironed therewith; for either they be Ilands of the Ocean sea, or maine land, the which wheresoever it ends is bounded with this Ocean. To this day they have not discovered at the Indies any mediterranean sea, as in Europe, Asia, and Affrike, into the which there enters some arme of this great sea,

and makes distinct seas, taking their names from the Provinces they bathe; and almost all the mediterranean Seas continue and ioyne together, and with the Ocean it selfe, by the straight of Gibraltar, which the Ancients called the Pillars of Hercules, although the Red Sea beeing separated from the mediterranean seas, enters alone into the Indian Ocean; and the Caspian sea ioynes not with any other: so that at the Indies wee finde not anie other sea then this Ocean, which they divide into two, the one they call the north sea, and the other the south; for that the Indies which were first discovered by the Ocean, and reacheth vnto Spaine, lies all to the north, and by that land thereafter discovered a sea on the other side, the which they called the South Sea, for that they decline vntill they have passed the Line; and having lost the North, or Pole articke, they called it South. For this cause they have called all that Ocean the South Sea, which lieth on the other side of the East Indies, althogh a great part of it be seated to the north, as al the coast of new Spaine, Nicaragua, Guatimala, and Panama. They say that hee that first discovered this sea was called Blasco Nuñez de Balboa, the which he did by that part which we now call Tierra Firme, where it growes narrow, and the two seas approach so neere the one to the other, that there is but seaven leagues of distance; for although they make the way eighteene from Nombre de Dios to Panama, yet is it with turning to seeke the commoditie of the way, but drawing a direct line the one sea shall not be found more distant from the other. Some have discoursed and propounded to cut through this passage of seaven leagues, and to ioyne one sea to the other, to make the passage from Peru more commodious and easie, for that these eighteene leagues of land betwixt Nombre de Dios and Panama is more painefull and chargeable then 2300 by sea, wherevpon some would say it were a meanes to drowne the land, one sea

Lib. III.

Herodotus.

Iovius.

being lower then another. As in times past we finde it written, that for the same consideration they gave over the enterprize to win the Red sea into Nile, in the time of King Sesostris, and since, in the Empire of the Ottomans. But for my part, I hold such discourses and propositions for vaine, although this inconvenient should not happen, the which I will not hold for assured. I beleeve there is no humaine power able to beat and breake downe those strong and impenetrable mountaines, which God hath placed betwixt the two seas, and hath made them most hard rockes, to withstand the furie of two seas. And although it were possible to men, yet in my opinion they should feare punishment from heaven in seeking to correct the workes which the Creator by his great providence hath ordained and disposed in the framing of this vniversall world. Leaving this discourse of opening the land, and ioyning both seas together, there is yet another lesse rash, but very difficult and dangerous to search out. Whether these two great gulphes do ioyne in any other part of the world, which was the enterprize of Fernando Magellan, a Portugall gentleman, whose great courage and constancie in the research of this subiect, and happy successe in the finding thereof, gave the name of eternall memory to this straight, which iustly they call by the name of the discoverer, Magellan, of which straight we will intreate a little, as of one of the greatest wonders of the world. Some have beleeved that this straight which Magellan had discovered in the South Sea was none, or that it was straightened, as Don Alonso de Ercilla writes in his *Araucana;* and at this day there are some that say there is no such straight, but that they are ilands betwixt the sea and land, for that the maine land endes there, at the end whereof are all ilands, beyond the which the one sea ioynes fully with the other, or to speake better, it is all one sea. But in truth it is most certaine, there is a straight and a long and stretched

out land on eyther side, although it hath not yet beene knowne how far it stretcheth of the one side of the straight towards the South. After Magellan, a shippe of the Bishoppe of Plasencia, Don Guttieres Carvajal, passed the straight (whose mast they say is yet at Lima, at the entrie of the palace), they went afterwards coasting along the South to discover the Straight, by the commandement of Don Garcia de Mendoza, then governor of Chille, according to that which Captaine Ladrillero found it and passed it. I have read the discourse and report he made, where he saieth, that he did not hazard himselfe to land in the Straight, but having discovered the North sea he returned back, for the roughnes of the time, winter being now come, which caused the waves comming from the North to grow great and swelling, and the sea continually foming with rage. In our time, Francis Drake, an Englishman, passed this straight. After him, Captaine Sarmiento passed it on the South side. And lastly, in the yeere 1587, other Englishmen passed it, by the instruction of Drake, which at this time runne all along the coast of Peru. And for that the report which the master Pilot that passed it made, seemeth notable vnto me, I will heere set it downe.

CHAP. XI.—*Of the Straight of Magellan, and how it was passed on the south side.*

In the yeere of our Lord God, one thousand five hundred seaventy nine, Francis Drake having passed the Straights and runne alongest the coast of Chille and all Peru, and taken the shippe of San Juan de Antona, where there was a great number of barres of silver, the Viceroy Don Francisco de Toledo armed and sent foorth two good shippes to discover the Straight, appoynting Pedro Sarmiento for Cap-

taine, a man learned in Astrologie. They parted from Callao of Lima in the beginning of October; and forasmuch as vpon that coast there blowes a contrary winde from the South, they tooke the sea, and having sailed litle above thirty days with a favourable winde, they came to the same altitude of the Straight; but for that it was very hard to discover, they approched neere vnto the land, where they entred into a great Bay, in the which there is an Archipelague of Ilands: Sarmiento grew obstinate, that this was the Straight, and staied a whole moneth to finde it out, by diverse wayes creeping vppe to the high mountaines. But seeing they could not discover it, at the instance of such as were in the army they returned to sea. The same day the weather grew rough, with the which they ranne their course; in the beginning of the night the Admiralls light failed, so as the other shippe never see them after. The day following the force of the winde continuing still, being a side wind, the Admiralles shippe discovered an opening, which made land, thinking good to enter there for shelter vntill the tempest were past. The which succeeded in such sort, as having discovered this vent, they found that it ranne more and more into the land, and coniecturing that it should be the Straight which they sought, they tooke the height of the Sunne, where they found themselves in fiftie degrees and a halfe, which is the very height of the Straight; and, to be the better assured, they thrust out their Brigandine, which having run many leagues into this arme of the sea without seeing any end, they found it to be the very Straight. And for that they had order to passe it, they planted a hie Crosse there, with letters thereon, to the end, that if the other ship should chance to arrive there, they should have newes of their Generall and follow. They passed the Straight in a favourable time without difficultie, and, passing into the north sea, they came to certaine vnknowne Ilandes, where they tooke in

fresh water and other refreshings. From thence they tooke their course towardes Cape de Verde, from whence the Pilote maior returned to Peru, by the way of Carthagena and Panama, carrying a discourse of the Straight to the Viceroy, and of all their successe, of whom he was well rewarded for his good service.

But Captaine Pedro Sarmiento sailed from Cape Verde to Seville in the same ship wherewith he had passed the Straight, and went to Court; where his Maiestie rewarded him; and at his instance, gave commaundement to prepare a great army, which he sent vnder the commaund of Diego Flores de Valdes, to people and fortifie this Straight. But this army, after variable successe, spent much, and profited little.

Returning now to the Viceadmiralles shippe, which went in company of the Generall, having lost him in the storme, they tooke the sea, but the wind being contrary and stormy, they looked all to perish, so as they confessed themselves, and prepared for death. This tempest continued three dayes without intermission, and hourely they feared to runne on ground; but it fel out contrary, for they went still from land, vntill the ende of the third day, that the storme ceased, and then taking the height, they found themselves in fiftie sixe degrees; but seeing they had not crossed, and yet were farre from land, they were amazed, whereby they surmized (as Hernando Lamero, Pilot of the said ship, tolde me) that the land which is on the other side of the Straight, as wee goe by the south sea, runnes not in the same direction as it doth to the Straight, but that it turneth to the East; for else it were impossible but they shoulde have touched land, having runne so long time with this crosse winde; but they passed on no further, neyther coulde they discover the lands end (which some holde to be there) whether it were an Iland on the other side of the Straight, where the two seas of

Lib. iii. North and South doe ioyne together, or that it did runne vppe towardes the East, and ioyne with the land of Vista as they call it, which answers to the Cape of Good Hope (as it is the opinion of some). The trueth hereof is not to this day well knowne, neither is there any one found that hath discovered that land. The Viceroy Don Martin Henriquez said vnto me, that he held this report for an invention of the English, that the Straight should presentlie make an Iland, and that the two seas did ioyne together; for that (beeing Viceroy of New Spaine) hee had diligently examined the Portugall Pilote, who had bin left there by Francis Drake, and yet had no knowledge of any such matter by him. But that was a very Straight, and a maine land on either side. Returning then to the saide Vice-admirall, they discovered this Straight (as the saide Hernando Lamero reported vnto mee) but by another mouth or entrie, and in a greater height, by reason of a certaine great Iland which is at the entrie of the Straight, which they call the Bell, for the forme it carries. And, as he saide, hee woulde have passed it; but the Captaine and souldiers woulde not yeelde therevnto, supposing that the time was too farre spent, and that they were in great daunger. And so they returned to Chille and Peru, without passing it.

Chap. xii.—*Of the Straight which some holde to be in Florida.*

Even as Magellan found out this Straight vppon the South, so some have pretended to discover another Straight, which they say is in the north, and suppose it to be in Florida, whose coast runs in such sort, as they knowe no end thereof. Peter Melendez, the Adelantado, a man very expert at sea, affirmeth for certaine that there is a Straight,

and that the King had commanded him to discover it, wherein he shewed a great desire; he propounded his reasons to proove his opinion, saying, that they have seene some remainders of shippes in the North Sea, like vnto those the which the Chinois vse, which had beene impossible, if there were no passage from one sea vnto another. Moreover, he reported, that in a certaine great Bay in Florida (the which runnes 300 leagues within the land) they see whales in some season of the yeere, which come from the other sea. Shewing moreover other likelihood, he concludes, that it was a thing agreeing with the wisedome of the Creator, and the goodly order of nature, that as there was communication and a passage betwixt the two seas at the Pole Antartike, so there should in like sort, be one at the Pole Artike, which is the principall Pole. Some will say that Drake had knowledge of this Straight, and that he gave occasion so to iudge, whenas he passed along the coast of new Spaine by the South Sea. Yea, they hold opinion, that other Englishmen,[1] which this yeere 1587, tooke a shippe comming from the Philippines, with great quantitie of gold and other riches, did passe this straight, which prize they made neere to the California, which course the ships returning from the Philippines and China, to new Spaine, do vsually observe. They confidently beleeve that, as the courage of man is great, and his desire infinite, to finde new meanes to inrich himselfe, so within few yeeres this secret will be discovered. And truly, it is a thing worthie admiration, that as the Ants do alwaies follow the trace of other, so men in the knowledge and search of new things, never stay, vntill they have the desired end for the content and glorie of men. And the high and eternall wisedome of the Creator vseth this

[1] This was the voyage of Cavendish. The prize was taken by him off Cape San Lucas, the south point of California, on November 14th, 1587.

Lib. iii.

curiositie of men, to communicate the light of his holy Gospell to people that alwaies live in the obscure darkenesse of their errors. But to conclude, the straight of the Artike Pole (if there be any) hath not been yet discovered. It shall not therefore be from the purpose, to speake what we know of the particularities of the Antartike straight, already discovered and knowne, by the report of such as have seene and observed it.

Chap. xiii.—*Of the properties of the Straight of Magellan.*

This Straight, as I have said, is iust fiftie degrees to the South, and from one sea to another, fourscore and ten or a hundred leagues, in the narrowest place it is a league and little lesse, where it was intended the King should build a Fort to defend the passage. It is so deepe in some places that it cannot be sounded, and in some places they finde ground at 18, yea, at 15, fadomes. Of these hundred leagues which it containes in length from one sea vnto the other, it is plainely seene that the waves of the South Sea runne 30 leagues, and the other 70 are possessed with the billowes and waves of the North Sea. But there is this difference, that the 30 leagues to the South runne betwixt the rockes and most high mountaines, whose tops are continually covered with snow, so as they seeme, by reason of their great height, to be ioyned together, which makes the entrie of the Straight to the South so hard to discover. In these 30 leagues the sea is very deepe, and without bottome, yet may they fasten their ships to the land, the banckes being straight and vneven; but, in the 70 leagues towards the North, they finde ground, and of either side there are large plaines, the which they call *Savannahs*. Many great rivers of faire and cleere water runne into this Straight, and thereabout are great and wonderfull forrests, whereas they finde

some trees of excellent wood and sweete, the which are not knowne in these partes, whereof such as passed from thence to Peru, brought some to shew. There are many meadowes within the land, and many Ilands in the midst of the Straight. The Indians that inhabite on the South side are little and cowards; those that dwell on the North part are great and valiant—they brought some into Spaine, which they hadde taken. They found peeces of blew cloth, and other markes and signes that some men of Europe had passed there. The Indians saluted our men with the name of Iesus. They are good archers, and goe clad in wilde beasts skinnes, whereof there is great aboundance. The waters of the Straight rise and fall as the tide, and they may visibly see the tides come of the one side of the North sea, and of the other from the South whereas they meete, the which (as I have said) is thirtie leagues from the South, and three score and tenne from the North. And although it seemes there should be more daunger then in all the rest, yet whenas Captaine Sarmiento his shippe, whereof I spake, passed it, they had no great stormes, but found farre lesse difficultie then they expected; for then the time was very calme and pleasant. And, moreover, the waves from the north sea came broken, by reason of the great length of three score and tenne leagues, and the waves from the south sea were not raging, by reason of the great deapth, in which deapth the waves breake, and are swallowed vp. It is true, that in winter the straight is not navigable, by reason of the tempests and raging of the sea in that season. Some shippes which have attempted to passe the Straight in winter have perished. One onely shippe passed it on the south side, which is the Captaine I made mention of. I was fully instructed of all that I have spoken by the pilote thereof, called Hernando Alonso, and have seene the true discription of the Straight they made in passing it, whereof they carried the copie to the King of Spaine, and the original to the Viceroy of Peru.

Chap. xiv.—*Of the ebbing and flowing of the Indian Ocean.*

Lib. iii.

One of the most admirable secrets of Nature is the ebbing and flowing of the sea, not onely for this strange property of rising and falling, but much more for the difference there is thereof in diverse seas, yea in diverse coastes of one and the same sea. There are some seas that have no daily flowing nor ebbing, as we see in the inner Mediterranean, which is the Thyrene sea, and yet it flowes and ebbes every day in the vpper Mediterranean sea, which is that of Venice, and iustly giveth cause of admiration, that these two seas being Mediterranean, and that of Venice being no greater then the other, yet hath it its ebbing and flowing as the Ocean, and that other sea of Italie none at all. There are some Mediterranean seas, that apparently rise and fall everie moneth; and others that neyther rise in the day nor in the moneth. There are other seas, as the Spanish Ocean, that have their flux and reflux every day; and besides that, they have it monethly, which commeth twice, that is to say, at the entry, and at the ful of every Moone, which they call Spring tides. To say that any sea hath this daily ebbing and flowing, and not monethly, I knowe not any. It is strange, the difference we finde of this subiect at the Indies, for there are some places whereas the sea doth daily rise and fall two leagues, as at Panama, and at a high water it riseth much more. There are other places where it doth rise and fall so little, that hardly can you finde the difference. It is ordinary in the Ocean sea to have a daily flowing and ebbing, and that was twice in a naturall day, and ever it falls three quarters of an houre sooner one day then another, according to the course of the Moone: so as the tide falles not alwayes in one houre of the day. Some would say, that this flux and reflux proceeded from the locall motion of the water of the sea; so as the

water that riseth on the one side falles on the other that is opposite vnto it; so that it is ful sea on the one side when as it is a lowe water on the opposite, as we see in a kettle full of water, when wee moove it; when it leanes to the one side the water increaseth, and on the other it diminisheth. Others affirme, that the sea riseth in all partes at one time, and decreaseth at one instant; as the boyling of a pot, comming out of the centre it extendeth it selfe on all partes, and when it ceaseth, it falles likewise on all partes.

This second opinion is true, and in my iudgement, certaine and tried, not so much for the reasons which the Philosophers give in their meteors, as for the certaine experience wee may make. For to satisfie my selfe vpon this point and question, I demanded particularly of the said Pilot, how he found the tides in the straight, and if the tides of the South sea did fall whenas those of the North did rise. And contrariwise (this question being true) why the increase of the sea in one place, is the decrease thereof in another, as the first opinion holdeth. He answered that it was not so, but they might see plainely, that the tides of the North and South seas rise at one instant, so as the waves of one sea incountred with the other, and at one instant likewise they began to retire, every one into his sea, saying, that the rising and falling was daily seene, and that the incounter of the tides, as I have saide, was at three score and tenne leagues to the North sea, and thirtie to the South. Whereby wee may plainely gather, that the ebbing and flowing of the Ocean is no pure locall motion, but rather an alteration; whereby all waters really rise and increase at one instant; and in others they diminish, as the boyling of a pot, whereof I have spoken. It were impossible to comprehend this poynt by experience, if it were not in the Straight, where all the Ocean, both on th' one side and on th' other, ioynes together; for none but Angelles can see it, and iudge of the opposite parts; for

Lib. iii.

that man hath not so long a sight, nor so nimble and swift footing as were needefull, to transporte his eyes from one parte to another, in so short a time, as a tide will give him respite, which are only six houres.

Chap. xv.—*Of sundry Fishes, and their manner of fishing at the Indies.*

There are in the Indian Ocean an infinite number of fishes, the kindes and properties whereof the Creator only can declare. There are many such as we have in the sea of Europe, as shaddes[1] and aloses,[2] which come from the sea into the rivers; dorads,[3] pilchards,[4] and many others. There are others, the like I doe not thinke to have seene in these partes, as those which they doe call Cabrillas,[5] which doe somewhat resemble the trowt,[6] and in new Spaine they call them Bobos, they mount from the sea into the rivers. I have not seene any bream there, nor trowts, although some say there are in Chille. There are tunny fish in some partes vpon the coast of Peru, but they are rare; and some are of opinion that, at a certaine time, they do cast their spawne in the Straight of Magellan, as they doe in Spaine at the Straight of Gibraltar, and for this reason they finde more vpon the coast of Chille, although those I have seen there are not like to them in Spaine. At the Ilandes (which they call Barlovento), which are Cuba, Santo Domingo, Puerto Rico, and Jamaica, they find a fish which they call Manati, a strange kinde of fish, if we may call it fish, a creature which ingenders her yoong ones alive, and hath teates, and doth nourish them with milke, feeding of grasse in the fieldes, but in effect it lives continually in

[1] *Liças*, a shad. [2] *Savalos*, a shad. [3] *Dorados*.
[4] *Sardinas*, sardine. [5] *Cabrillas*, prawns. [6] *Truchas*.

the water, and therefore they eate it as fish; yet when I did eate of it at Santo Domingo on a friday, I hadde some scruple, not for that which is spoken, but for that in colour and taste it was like vnto morselles of veale, so is it greene, and like vnto a cowe on the hinder partes. I didde woonder at the incredible ravening of the Tiburons, or sharkes, whenas I did see drawne from one (that was taken in the Port) out of his gullet, a butchers great knife, a great yron hooke, and a peece of a cowes head with one whole horne; neyther doe I knowe if both were there or no. I did see in a creeke made with that sea, a quarter of a horse for pleasure hanging vpon a stake, whither presently came a company of these Tiburons at the smel thereof; and for the more pleasure, this horse flesh was hung in the aire, I knowe not how many hand breadth from the water; this company of fish flocke about it, leaping vp, and with a strange nimblenesse cut off both flesh and bone off the horse leg as if it had beene the stalk of a lettuce; their teeth being as sharpe as a rasour. There are certaine small fishes they call Romeros,[1] which cleave to these Tiburons, neyther can they drive them away, and they are fed with that which falles from the Tiburons. There are other small fishes, which they call flying fishes, the which are found within the tropickes and in no other place, as I thinke: they are pursued by the Dorados, and to escape them they leape out of the sea, and goe a good way in the ayre, and for this reason they are called flying Fishes; they have wings as it were of linnen cloth, or of parchment, which do supporte them some space in the ayre. There did one flie or leape into the shippe wherin I went, the which I did see, and observe the fashion of his wings.

In the Indian histories there is often mention made of Lizards or Caymans, as they call them, and they are the

[1] Pilot fish.

Lib. iii.

very same which Plinie and the Antients call Crocodiles; they finde them on the sea side, and in hote rivers, for in colde rivers there are none to be found; and, therefore, they finde none vpon all the coast of Peru vnto Payrta, but forward they are commonly seene in the rivers. It is a most fierce and cruell beast, although it be slow and heavie. Hee goes hunting and seekes his prey on the land, and what hee takes alive he drownes it in the water, yet dooth hee not eate it but out of the water, for that his throate is of such a fashion as if there entred any water he should easily be drowned. It is a woonderfull thing to see a combat betwixt a Cayman and a Tiger, whereof there are most cruell at the Indies. A religious man of our Company tolde me that he had seene these beasts fight most cruelly one against the other; vpon the sea shoare the Cayman with his taile gave great blowes vnto the Tiger, striving with his great force to carry him into the water; and the Tiger with his pawes resisted the Caymant, drawing him to land. In the end the Tiger vanquished and opened the Lizard, it seemes by the belly, the which is most tender and penetrable, for in every other parte hee is so hard, that no lance, and scarce a harquebuze, can pierce it. The victory which an Indian had of a Cayman was yet more rare; the Cayman had carried away his yong childe, and sodainly plunged into the sea; the Indian, mooved with choller, cast himselfe after him, with a knife in his hand, and as they are excellent swimmers and divers, and the Cayman swimmeth alwayes on the toppe of the water, hee hurt him in the belly, and in such sort, that the Cayman, feeling himselfe wounded, went to the shoare, leaving the little infant dead. But the combate which the Indians have with Whales is yet more admirable, wherein appeares the power and greatnesse of the Creator to give so base a Nation, as be the Indians, the industry and courage to incounter the most fierce and deformed beast in the worlde,

and not only to fight with him, but also to vanquish him, and to triumph over him. Considering this, I have often remembred that place of the Psalme, speaking of the Whale, *Draco iste, quem formasti ad illudendum eum.* What greater mockerie can there be then to see an Indian leade a whale as bigge as a mountaine vanquished with a corde. The maner the Indians of Florida vse (as some expert men have tolde me) to take these whales (whereof there is great store) is, they put themselves into a canoe, which is like a barke of a tree, and in swimming approach neere the whales side; then with great dexteritie they leape to his necke, and there they ride as on horsebacke, expecting his time, then hee thrustes a sharpe and strong stake, which hee carries with him, into the whales nosthrill, for so they call the hole or vent by which they breathe; presently he beates it in with an other stake as forcibly as hee can; in the meane space the whale dooth furiously beate the sea, and raiseth mountaines of water, running into the deepe with great violence, and presently riseth againe, not knowing what to doe for paine; the Indian still sittes firme, and to give him full payment for this trouble, he beates another stake into the other vent or nosthrill so as he stoppeth him quite, and takes away his breathing; then hee betakes him to his canoe, which he holdes tied with a corde to the whales side, and goes to land, having first tied his corde to the whale, the which hee lettes runne with the whale, who leapes from place to place whilest he finds water enough; being troubled with paine, in the end hee comes neere the land, and remaines on ground by the hugenesse of his body, vnable any more to moove; then a great number of Indians come vnto the conquered beast to gather his spoiles, they kill him, and cut his flesh in peeces, this do they drie and beate into powder, vsing it for meate, it dooth last them long: wherein is fulfilled that which is spoken in another Psalme of the whale, *Dedisti eum*

Lib. iii.

Psalm ciii.

Psalm lxxiii.

Lib. iii.

escam populis Æthiopum. Peter Melendez the Adelantado did often speake of this kinde of fishing. Whereof Monardes makes mention in his booke. There is another fishing which the Indians do commonly vse in the sea, the which, although it be lesse, yet is it worthy the report. They make as it were faggots of bul-rushes or drie sedges well bound together, which they call Balsas; having carried them vppon their shoulders to the sea, they cast them in, and presently leape vppon them. Being so set, they lanch out into the deepe, rowing vp and downe with small reedes of eyther side, they goe a league or two into the sea to fish, carrying with them their cordes and nettes vppon these faggots, and beare themselves thereon. They cast out their nettes, and do there remaine fishing the greatest parte of the day and night, vntill they have filled vp their measure, with the which they returne well satisfied. Truely it was delightfull to see them fish at Callao of Lima, for that they were many in number, and every one set on horsebacke, cutting the waves of the sea, which in their place of fishing are great and furious, resembling the Tritons or Neptunes, which they paint vppon the water, and beeing come to land they drawe their barke out of the water vpon their backes, the which they presently vndoe, and lay abroade on the shoare to drie. There were other Indians of the vallies of Yca which were accustomed to goe to fish in leather, or skinnes of sea-wolves, blowne vp with winde, and from time to time they did blowe them like balles of winde, lest they should sinke. In the vale of Cañete, which in olde time they called Huarco, there were a great number of Indian fishers: but because they resisted the Ynca when he came to conquer that land, he made shew of peace with them, and therefore to feast him they appoynted a solemne fishing of manie thousand Indians, which went to sea in their vessels of reeds; at whose returne, the Ynca, who had layde many souldiers in ambush,

made a cruell butcherie of them, so as afterward this land remained vnpeopled, although it be aboundant and fertile. I did see an other manner of fishing, wherevnto Don Francisco de Toledo the Viceroy didde leade mee, yet was it not in the sea, but in a river which they call great, in the Province of Charcas, where the Indians Chirihuanas plunged into the water, and swimming with an admirable swiftnesse, followed the fish, where with dartes and hookes which they vse to carry in their right hand, only swimming with the left, they wound the fish, and so hurt they brought them foorth, seeming in this more like vnto fishes then men of the land. But now that we have left the sea, let vs come to other kinde of waters that remaine to be spoken of.

CHAP. XVI.—*Of Lakes and Pooles that be at the Indies.*

In place of the Mediterranean Sea, which is in the old world, the Creator hath furnished this new with many Lakes, whereof there are some so great as they may be properly called seas, seeing the Scripture calleth that of Palestina so, which is not so great as some of these. The most famous is that of Titicaca, which is at Peru, in the Province of Collao, the which, as I have said in the former booke, containes neere fourscore leagues in compasse, into the which there runnes ten or twelve great rivers. A while since they began to saile in it with barkes and shippes, wherein they proceeded so ill that the first shippe was split with a tempest that did rise in the Lake. The water is not altogether sower nor salt, as that of the sea, but it is so thicke as it cannot be drunke. There are two kindes of fishes breed in this Lake in great aboundance, the one they call Suchis,[1] which is great and savorous, but phlegmatike and vnwholesome, and the other Bogos, which is more

[1] See also *G. de la Vega*, i, lib. viii, cap. 22.

Lib. iii. healthfull, although it be lesse and fuller of bones; there are great numbers of wilde duckes and widgeons. Whenas the Indians will feast it, or shew delight to any one that passeth along the two banckes, which they call Chucuyto and Omasuyo, they assemble a great number of canoes, making a circle and invironing the fowle, vntill they take with their hands what they please, and they call this maner of fishing *Chacu*. On the one and the other bancke of this Lake are the best habitations of Peru. From the issue thereof there growes a lesser Lake, although it be great, which they call Paria, vpon the bankes whereof there are great numbers of cattell, especially swine, which grow exceeding fatte with the grasse vpon those banks. There are many other Lakes in the high mountains whence proceede brooks and rivers, which after become great flouds. Vpon the way from Arequipa to Callao there are two Lakes vpon the mountains of the one and other side the way; from the one flowes a brooke, which growes to a floud, and falles into the South sea; from the other they say the famous river of Apurimac takes her beginning, from the which some hold that the renowned river of Amazones, otherwise called Marañon, proceedes, with so great an assembly and aboundance of waters, which ioyne in these mountaines. It is a question which may be often asked, why there are so many Lakes in the toppes of these mountaines, into the which no river enters, but contrariwise many great streames issue forth, and yet do we scarce see these Lakes to diminish anything at any season of the yeere. To imagine that these Lakes grow by the snow that melts or raine from heaven, that doth not wholy satisfie me, for there are many that have not this aboundance of snow nor raine, and yet we see no decrease in them, which makes me to beleeve they are springs which rise there naturally, although it be not against reason to thinke that the snowne and raine helpe somewhat in some seasons. These Lakes are so common

in the highest toppes of the mountaines that you shall hardly finde any famous river that takes not his beginning from one of them. Their water is very cleere, and breedes little store of fish, and that little is very small, by reason of the cold which is there continually. Notwithstanding, some of these Lakes be very hotte, which is another wonder. At the end of the vallie of Tarapaya, neere to Potozi, there is a Lake in forme round, which seemes to have been made by compasse, whose water is extreamely hote, and yet the land is very colde. They are accustomed to bathe themselves neere the banke, for else they cannot indure the heate being farther in. In the midst of this Lake there is a boiling of above twenty foote square, which is the very spring, and yet (notwithstanding the greatnes of this spring) it is never seene to increase in any sort; it seemes that it exhales of it selfe, or that it hath some hidden and vnknowne issue, neither do they see it decrease, which is another wonder, although they have drawne from it a great streame, to make certaine engines grinde for mettall, considering the great quantity of water that issueth forth, by reason whereof it should decrease. But leaving Peru, and passing to New Spaine, the Lakes there are no less to be observed, especially that most famous of Mexico, where we finde two sortes of waters, one salt like to that of the sea, and the other cleere and sweete, by reason of the rivers that enter into it. In the midst of this Lake is a rocke verie delightfull and pleasant, where there are baths of hote water that issue forth, the which they greatly esteeme for their health. There are gardins in the middest of this Lake, framed and fleeting vpon the water, where you may see plottes full of a thousand sortes of hearbes and flowers, and they are in such sort as a man cannot well conceive them without sight. The Citie of Mexico is seated in the same Lake, although the Spaniards have filled vp the place of the situation with earth, leaving onely some currents of water, great and

Lib. iii. small, which enter into the Citie, to carrie such things as they have neede of, as wood, hearbes, stone, fruites of the countrie, and all other things. When Cortes conquered Mexico he caused Brigandins to be made, yet afterwards he thought it more safe not to vse them, therefore they vse Canoes, whereof there is great store. There is great store of fish in this Lake, yet have I not seene any of price; notwithstanding, they say the revenue of this Lake is worth three hundred thousand duckets a yeere. There are many other Lakes not far from this whence they bring much fish to Mexico. The Province of Mechovacan is so called for that it aboundeth greatly with fish. There are goodly and great Lakes, in the which there is much fish, and this Province is coole and healthfull. There are many other Lakes whereof it is not possible to make mention, nor to know them in particular, onely we may note by that which hath beene discoursed in the former booke, that vnder the burning Zone there is greater abundance of Lakes then in any other parte of the worlde; and so by that which we have formerly spoken, and the little we shall say of rivers and fountaines, we will end this discourse of Waters.

Chap. xvii.—*Of many and divers Springs and Fountaines.*

There is at the Indies, as in other parts of the world, great diversitie of Springs, Fountaines, and Rivers, and some have strange properties. In Huancavilica of Peru (where the mines of quicksilver be) there is a Fountaine that casts forth hote water, and in running the water turnes to rocke, of which rocke or stone they build in a maner all the houses of the village. This stone is soft, and easie to cutte, for they cut it as easily with yron as if it were wood; it is light and lasting. If men or beasts drinke thereof they die, for that it congeales in the very entrailes, and turnes

into stone, and for that cause some horses have died. As this water turnes into stone, the which flowes stoppes the passage to the rest, so as of necessitie it changeth the course, and for this reason it runnes in divers places as the rocke increaseth. At the point of Cape S. Helen there is a spring or fountaine of pitch, which at Peru they call *Copey*. This should be like to that which the Scripture speakes of the wild valley, where they did finde wells of pitch. The Mariners vse these fountaines or wells of *Copey* to pitch their ropes and tackling, for that it serves them as pitch and tarre in Spaine. When I sailed into New Spaine by the coast of Peru the Pilot showed me an Iland, which they call the Ile of Wolves, where there is another fountaine or well of *Copey* or pitch, with the which they anoint their tackling. There is an other fountaine of pitch, which the Pilot (an excellent man in his charge) tolde me he had seene, and that sometimes sailing that waies, being so farre into the sea as he had lost the sight of land, yet did he know by the smell of the *Copey* where he was, as well as if he had knowne the land, such is the savour that issues continually from that fountaine. At the baths, which they call the baths of the Ynca, there is a course of water which comes forth all hote and boiling, and ioyning vnto it there is another, whose water is as cold as ice. The Ynca was accustomed to temper the one with the other, and it is a wonderfull thing to see springs of so contrarie qualities so neere one to the other. There are an infinite number of other hote springs, specially in the Province of Charcas, in the water whereof you cannot indure to hold your hand the space of an Ave Maria, as I have seene tried by wager. In a farme neere to Cuzco springs a fountain of salt, which as it runs turns into salt, very white and exceeding good, the which, if it were in another countrie, were no small riches, yet they make very small accoumpt thereof for the store they have there. The waters which

Lib. iii.

runne in Guayaquil, which is in Peru, almost vnder the Equinoctiall line, are held to be healthfull for the French disease, and other such like, so as they come from many places farre off to be cured. And they say the cause thereof is for that in that Countrie there is great aboundance of rootes, which they call sarsaparilla,[1] the vertue and operation whereof is so knowne that it communicates her propertie to the waters wherein it is put to cure this disease. Vilcañota is a mountaine, the which (according to common opinion) is in the highest part of Peru, the toppe whereof is all covered with snow, and in some places is blacke like coale. There issueth forth of it two springs in contrarie places, which presently growe to be very great brookes, and so by little and little become great flouds, the one goes to Collao, into the great Lake Titicaca, the other goes to the lands, and is that which they call Yucay,[2] which, ioyning with another, runnes into the North Sea with a violent and furious course. This spring, when it comes out of the rocke Vilcañota, as I have said, is of the colour of lie, having an ashie colour, and castes a fume as a thing burnt, the which runs farre in this sort, vntill the multitude of waters that runne into it quench this smoake and fire which it drawes from the spring. In New Spaine I have seene a spring as it were inke, somewhat blew; in Peru another of colour red like bloud, wherevpon they call it the red river.

Chap. xviii.—*Of Rivers.*

Amongst all Rivers, not onely at the Indies, but generally through the world, the River Marañon or of Amazons is the chiefe, whereof we have spoken in the former booke. The Spaniards have often sailed it, pretending to discover

[1] See my translation of *Cieza de Leon*, p. 200.

[2] The Vilcamayu, which flows into the Ucayali.

the lands, which by report are very rich, especially those they call Dorado and Paytiti. Juan de Salinas, the Adelantado, made a memorable entrie, though of small effect. There is a passage which they call Pongo,[1] one of the most daungerous in all the worlde, for the river being there straightened, and forced betwixt two high steepe rockes, the water falles directly downe with so great a violence that, comming steepe downe, it causeth such a boyling as it seemeth impossible to passe it without drowning, yet the courage of men durst attempt to passe it for the desire of this renowned Dorado; they slipt downe from the top to the bottome, thrust on with the violence and currant of the floud, holding themselves fast in their canoes or barkes; and although in falling they were turned topsie turvie, and both they and their canoes plunged into the deepe, yet by their care and industry they recovered themselves againe; and in this sort the whole army escaped, except some few that were drowned. And that which is more admirable they carried themselves so cunningly that they neyther lost their powder nor munition. In their returne (having suffered many troubles and daungers) they were forced in the end to pass backe that same way, mounting by one of those high Rockes, sticking their poinards in the rocke.

Captain Pedro de Ursua made an other entry by the same river, who being dead in the same voyage and the souldiers mutinied, other Captaines followed the enterprise by an arme that comes into the north sea. A religious man of our company told vs that, being then a secular man, he was present in a manner at all that enterprise, and that the tides did flowe almost a hundred leagues vp the river, and whereas it enters into the sea (the which is vnder the line or very neere); it hath 70 leagues breadth at the mouth of it, a matter incredible, and which exceedes the breadth of the Mediterranean

[1] A corruption of *Puncu*, a door.

Lib. III.

sea, though there be some others, who in their descriptions give it but twenty-five or thirty leagues bredth at the mouth. Next to this river that of Plata, or of Silver, holdes the second place, which is otherwise called Paraguay, which runnes from the mountaines of Peru into the sea, in thirty-five degrees of altitude to the South; it riseth (as they say) like to the river of Nile, but much more without comparison, and makes the fields it overflowes like vnto a sea for the space of three moneths, and after returneth againe to his course, in the which ships do saile many leagues against the streame. There are many other rivers that are not of that greatnes, and yet are equall, yea they surpasse the greatest of Europe, as that of Magdalena, neere to Santa Martha the great river, and that of Alvarado in New Spaine, and an infinit number of others. Of the south side, on the mountains of Peru, the rivers are not vsually so great, for that their current is not long, and that many waters cannot ioyne together, but they are very swift, descending from the mountaines, and have sodaine falles, by reason whereof they are very dangerous, and many men have perished there. They increase and overflowe most in the time of heate. I have gone over twenty and seaven rivers vpon that coast, yet did I never passe any one by a foord. The Indians vse a thousand devises to passe their rivers. In some places they have a long cord that runs fro one side to th' other, and thereon hangs a basket, into the which he puts himselfe that meanes to passe; and then they drawe it from the bancke with another corde, so as hee passeth in this basket. In other places the Indian passeth, as it were on horse backe, vppon a bottle of straw, and behinde him hee that desires to passe; and so rowing with a peece of a boorde, carries him over. In other places they make a floate of gourds or pompions, vppon the which they set men with their stuffe to carry over, and the Indians having cordes fastned to them, goe swimming before, and drawe

this floate of pompions after them, as horses doe a Coach; others goe behinde thrusting it forward. Having passed, they take ther barke of pompions vppon their backe, and returne swimming; this they doe in the river of Santa in Peru. We passed that of Alvarado in New Spaine vpon a table, which the Indians carried vpon their shoulders, and when they lost their footing they swamme. These devises, with a thousand others wherewith they vse to passe their rivers, breede a terrour in the beholders, helping themselves with such weake and vnsure means, and yet they are very confident. They do vse no other bridges but of haire or of straw. There are now vppon some rivers bridges of stone, built by the diligence of some governours, but many fewer then were needfull in such a country, where so many men are drowned by default thereof, and the which yeeldes so much silver, as not onely Spaine, but also other strange countries make sumptuous buildings therewith. The Indians do drawe from these floudes, that runne from the mountaines to the vallies and plaines, many and great brooks to water their land, which they vsually doe with such industry, as there are no better in Murcia, nor at Milan it selfe, the which is also the greatest and onely wealth of the Plaines of Peru, and of many other partes of the Indies.

CHAP. XIX.—*Of the qualitie of the land at the Indies in generall.*

We may know the qualitie of the land at the Indies, for the greatest parte (seeing it is the last of the three Elements, whereof wee have propounded to treate in this Booke), by the discourse we have made in the former Booke of the burning Zone, seeing that the greatest part of the Indies dooth lie vnder it. But to make it knowne the more particularly, I have observed three kindes of landes, as I have

Lib. III.

passed through those Regions; whereof there is one very lowe, another very high, and the third which holds the middle of these two extreames. The lower is that which lieth by the sea coasts, whereof there is in all partes of the Indies, and it is commonly very hote and moist, so as it is not so healthfull; and at this day we see it lesse peopled, although in former times it hath beene greatly inhabited with Indians, as it appeareth by the histories of New Spaine and Peru, and where they kept and lived, for that the soile was naturall vnto them being bred there. They lived of fishing at sea, and of seeds, drawing brooks from the rivers, which they vsed for want of raine, for that it raines little there, and in some places not at all. This lowe countrie hath many places inhabitable, as wel by reason of the sands which are dangerous (for there are whole mountaines of these sandes) as also for the marishes which grow by reason of the waters that fall from the mountaines, which finding no issue in these flatte and lowe landes, drowne them, and make them vnprofitable.

And in trueth the greatest parte of all the Indian sea coast is of this sort, chiefly vppon the South Sea. The habitation of which coasts is at this present so wasted and contemned, that of thirtie partes of the people that inhabited it, there wants twenty-nine; and it is likely the rest of the Indians will in short time decay. Many, according to the varietie of their opinions, attribute this to diverse causes; some to the great labour which hath beene imposed vppon these Indians; others vnto the change and varietie of meates and drinks they vse, since their commerce with the Spaniardes; others to their great excesse and drinking, and to other vices they have; for my part, I hold this disorder to be the greatest cause of their decay, whereof it is not now time to discourse any more. In this lowe countrey (which I say generally is vnhealthfull, and vnfit for mans habitation) there is exception in some places

which are temperate and fertile, as the greatest part of the Plaines of Peru, where there are coole vallies and very fertile. The greatest part of the habitation of the coast entertaines all the traffike of Spaine by sea; whereon all the estate of the Indies dependeth. Vpon this coast there are some Townes wel peopled, as Lima and Truxillo in Peru, Panama, and Carthagena vppon the maine land, and in the Ilands San Domingo, Puerto Rico, and Havana, with many other Townes which are lesse than these, as Vera Cruz in New Spaine, Yca, Arica and others in Peru; the ports are commonly inhabited, although but slenderly. The second sort of land is contrary, very high, and by consequent, colde and drie, as all the mountaines are commonly. This land is neither fertile nor pleasant, but very healthfull, which makes it to be peopled and inhabited. There are pastures, and great store of cattell, the which for the most parte entertaines life, and by their cattell they supply the want they have of corne and graine by trucking and exchange. But that which makes these landes more inhabited and peopled is the riches of the mines that are found there, for that all obeys to golde and silver. By reason of the mines there are some dwellings of Spaniards and Indians which are increased and multiplied, as Potosi and Huancavilica in Peru, and Cacatecas in New Spaine. There are also through all these mountaines great dwellings of the Indians, which to this day are maintained, yea, some will say they increase, but that the labour of the mines dooth consume many, and some generall diseases have destroyed a great part, as the Cocoliste, in New Spaine, yet they finde no great diminution. In this extreamitie of high ground they finde two commodities, as I have saide, of pastures and mines, which doe well countervaile the two other that are in the lower grounds alongest the sea coast, that is, the commerce of the sea and the aboundance of wine, which groweth not but in the hot landes. Betwixt these two ex-

Lib. III.

treames there is ground of a meane height, the which, although it bee in some partes higher or lower one than other, yet doth it not approach neyther to the heate of the sea coast nor the intemperature of the mountaines. In this sorte of soile there groweth many kindes of graine, as wheate, barley, and mays, which grows not at all in the high countries; but well in the lower; there is likewise store of pasture, cattel, fruits, and greene forrests. This part is the best habitation of the three for health and recreation, and therefore it is best peopled of any parte of the Indies; the which I have curiously observed in manie voyages that I have vndertaken, and have alwayes found it true that the Province best peopled at the Indies be in this scituation. Let vs looke neerely into New Spaine (the which, without doubt, is the best Province the Sunne dooth circle), by what parte soever you doe enter you mount vp, and when you have mounted a good height you beginne to descend, yet very little, and that land is alwayes much higher then that along the sea coast.

All the land about Mexico is of this nature and scituation, and that which is about the Vulcan, which is the best soile of the Indies, as also in Peru, Arequipa, Guamanga, and Cuzco, although more in one then in the other. But in the end all is high ground, although they descend into deepe vallies, and climbe vppe to high mountaines; the like is spoken of Quito, Santa Fé, and of the best of the new kingdome. To conclude, I doe beleeve that the wisedome and providence of the Creator would have it so, that the greatest parte of this countrey of the Indies should be hilles, that it might be of a better temperature, for, being lowe, it had beene very hotte vnder the burning zone, especially being farre from the sea. Also all the land I have seene at the Indies is neere to the mountaines on the one side or the other, and sometimes of all partes. So as I have oftentimes saide there, that I woulde gladly see any place from

whence the horizon did fashion it selfe and end by the heaven, and a countrey stretched out and even, as we see in Spaine in a thousand champaine fields, yet doe I not remember that I have ever seene such sightes at the Indies, were it in the Ilands or vpon the maine land, although I have travelled above seaven hundred leagues in length. But, as I have saide, the neerenesse of the mountaines is very commodious in this region to temper the heate of the Sunne. To conclude, the best inhabited partes of the Indies are as I have saide, and generally all that countrie aboundes in grasse, pastures, and forrests, contrary vnto that which Aristotle and the Auntients did holde. So as when wee goe out of Europe to the Indies wee woonder to see the land so pleasant, greene, and fresh. Yet this rule hath some exceptions, and chiefly in the land of Peru, which is of a strange nature amongst all others, whereof wee will now proceede to speake.

Chap. xx.—*Of the properties of the land of Peru.*

Wee meane by Peru not that great parte of the worlde which they call America, seeing that therein is contained Bresil, the kingdome of Chille, and that of Grenada, and yet none of these kingdomes is Peru, but onely that parte which lies to the South, beginning at the kingdome of Quito, which is vnder the Line, and runnes in length to the realme of Chille, the which is without the Tropickes, which were sixe hundred leagues in length, and in breadth it containes no more then the mountaines, which is fiftie common leagues, although in some places, as at Chachapoyas, it be broader. This parte of the world which we call Peru is very remarkeable, and containes in it strange properties, which serveth as an exception to the generall rule of the

Indies. The first is, that vpon all that coast it blowes continually with one onely winde, which is South and South-west, contrary to that which dooth vsually blow vnder the burning Zone. The second is, that this winde, being by nature the most violent, tempestuous, and vnhealthfull of all others, yet in this region it is marvellous pleasing, healthful, and agreeable, so as we may attribute the habitation of that part therevnto, without the which it would be troublesome and uninhabitable, by reason of the heate, if it were not refreshed with the winde. The third propertie is, that it never raines, thunders, snowes, nor hailes in all this coast, which is a matter worthy of admiration. Fourthly, that a little distance from the coast it raines and snowes terribly. Fiftly, that there are two ridges of mountaines which runne the one as the other, and in one altitude, notwithstanding on the one there are great forrests, and it raines the greatest part of the yeere, being very hote, and the other is all naked and bare, and very colde; so as winter and summer are divided on those two mountaines, and raine and cleerenesse it selfe. For the better vnderstanding hereof wee must consider that Peru is divided as it were into three partes, long and narrow, which they call Llanos, Sierras, and Andes; the Llanos runnes alongest the sea coast, the Sierras be all hilles, with some vallies, and the Andes be steepe and craggie mountaines. The Llanos or sea coast have some tenne leagues in breadth, in some parts lesse, and in some parts a little more. The Sierra containes some twentie leagues in breadth, and the Andes as much, sometimes more, sometimes lesse. They runne in length from north to south, and in breadth from east to west. It is a strange thing that in so small a distance as fiftie leagues, equally distant from the Line and Pole, there should bee so great a contrarietie as to raine almost continually in one place and never in the other. It never raines vpon the coast or Llanos, although there falles sometimes a

small dew, which they call *Garua*, and in Spanish *Mollina*, the which sometimes thickens and falles in certaine droppes of water, yet is it not troublesome nor such as they neede any covering. Their coverings are of mattes, with a little earth vpon them, which is sufficient. Vpon the Andes it raines in a manner continually, although it be sometimes more cleere then other. In the Sierra, which lies betwixt both the extreames, it raineth in the same season as it dooth in Spaine, which is from September vnto Aprill, but in the other season the time is more cleere, which is when the Sunne is farthest off, and the contrarie when it is neerest, whereof we have discoursed at large in the former booke. That which they call Andes and Sierra are two ridges of most high mountaines, which runne above a thousand leagues, the one in view of the other, and almost equally. There are an infinite number of vicuñas, which breede in the Sierras, and are properly like vnto wilde goates, very nimble and swift. There are also of those beasts which they call Guanacos and Pacos, which are sheepe, which we may wel terme the asses of that countrey, whereof we shall speake in their place. And vpon the Andes they finde apes, very gentle and delightfull, and parrots in great numbers. There also they find the hearb or tree which they call coca, that is so greatly esteemed by the Indians, and the trafficke they make of it is worthy much mony.

That which they call Sierra causeth vallies, whereas it opens, which are the best dwellings of Peru, as is the valley of Xauxa, of Andahuaylas, and Yucay. In these vallies there growes wheat, mays, and other sortes of fruits, but lesse in one then in the other. Beyond the Citie of Cuzco (the ancient Court of the Lordes of those Realmes), the two ridges of mountaines seperate themselves one from the other, and in the midst leave a plaine and large champian, which they call the Province of Collao, where there are many rivers and great store of fertile pastures; there is

Lib. iii.

also that great Lake of Titicaca. And although it be a ful soile, and in the same height and intemperature, that the Sierra having no more trees nor forrests, yet the want they have of bread is countervailed with the rootes they sowe, the which they call Papas, and they grow in the earth. This roote is the Indians foode; for drying it, and making it cleane, they make that which they call *chuñu*, which is the bread and nourishment of those Provinces. There are other rootes and small hearbes which they eate. It is a healthfull soile, best peopled, and the richest of all the Indies, for the aboundance of cattell they feed, as well of those that are in Europe, as sheepe, neate, and goates, as of those of the Countrie which they call Guanacos and Pacos, and there are store of Partridges. Next to the Province of Collao is that of Charcas, where there are hote vallies very fertile, and very high rockes, the which are very rich in mines, so as in no part of the world shall you finde better nor fairer.

Chap. xxi.—*The reason why it does not rain on the Llanos, along the Sea coast.*

For that it is rare and extraordinarie to see a Countrie where it never raines nor thunders, men desire naturally to know the cause of this strangenes. The reason which some give that have neerely looked into it is, that vpon that coast there rise no vapors sufficient to engender raine for want of matter; but onely that there be small and light vapors which cannot breede any other then mistes and dewes, as we see in Europe, oftentimes vapors do rise in the morning which are not turned into raine but into mistes only, the which growes from the substance, which is not grosse and sufficient enough to turne to raine. They

say the reason why that which happens but some times in Europe falles out continually vpon the coast of Peru is, for that this region is very drie and yeeldes no grosse vapors. The drinesse is knowne by the great abundance of sandes, having neither welles nor fountaines, but of fifteene fathoms deepe (which is the height of a man or more), and that is neere vnto rivers, the water whereof, piercing into the land, giues them meanes to make welles. So as it hath been found by experience, that the course of rivers being turned, the welles have beene dried vp vntill they returned to their ordinarie course; and they give this reason for a materiall cause of this effect; but they have another efficient, which is no lesse considerable, and that is the great height of the Sierra, which, comming along the coast, shadowes the Llanos, so as it suffers no winde to blowe from the land, but above the toppes of these mountaines. By meanes whereof there raines no winde but that from the Sea, which finding no opposite, doth not presse nor straine forth the vapors which rise to engender raine, so as the shadowe of the mountaines keepes the vapors from thickning, and convertes them all into mistes. There are some experiences agree with this discourse, for that it raines vpon some small hilles along the coast, which are at least shadowed, as the rockes of Atico and Arequipa. It hath rained in some yeeres whenas the northern or easterly windes have blowen: yea, all the time they have continued, as it happened in seventie eight, vpon the Llanos of Truxillo, where it rained aboundantly, the which they had not seene in many ages before. Moreover, it raines vpon the same coast, in places, whereas the easterly or northerne windes be ordinarie, as in Guayaquil, and in places whereas the land riseth much, and turnes from the shadow of the mountaines, as in those that are beyond Arequipa. Some discourse in this maner, but let every one thinke as he please. It is most certaine, that comming from the mountaines to the

Lib. iii.

vallies, they do vsually see as it were two heavens, one cleere and bright above, and the other obscure, and as it were a graie vaile spread vnderneath, which covers all the coast; and although it raine not, yet this mist is wonderfull profitable to bring forth grasse, and to raise vp and nourish the seede; for although they have plentie of water, which they draw from the Pooles and Lakes, yet this moisture from heaven hath such a vertue, that ceasing to fal vpon the earth, it breedes a great discommoditie and defect of graine and feedes. And that which is more worthy of admiration, the drie and barren sandes are by this deaw so beautified with grasse and flowers, as it is a pleasing and agreeable sight, and verie profitable for the feeding of cattell, as we see in the mountaine called Arena, neere to the Cittie of Kings.

Chap. xxii.—*Of the propertie of new Spaine, of the Ilands, and of other Lands.*

New Spaine passeth all other Provinces in pastures, which breeds infinite troopes of horse, kine, sheepe, and other cattell. It abounds in fruite and all kinde of graine. To conclude, it is a Countrie the best furnished, and most accomplished at the Indies. Yet Peru doth surpasse it in one thing, which is wine, for that there growes store and good; and they daily multiplie and increase, the which doth grow in very hote vallies, where there are waterings. And although there bee vines in New Spaine, yet the grape comes not to his maturitie, fit to make wine. The reason is, for that it raines there in Iulie and August, whenas the grape ripens; and therefore it comes not to his perfection. And if anyone through curiositie would take the paines to make wine, it should be like to that of Genoa and Lom-

bardie, which is very small and sharpe, having a taste like vnto verjuice. The Ilands which they call Barlovente, which be Hispaniola, Cuba, Puerto Rico, and others thereabouts, are beautified with many greene pastures, and abound in cattell, as neate, and swine, which are become wilde. The wealth of these Ilands be their sugar-workes and hides. There is much Cassia fistula and ginger. It is a thing incredible, to see the multitude of these marchandizes brought in one fleete, being in a maner impossible that all Europe should waste so much. They likewise bring wood of an excellent qualitie and colour, as ebony, and others, which serve for buildings and joyners. There is much of that wood which they call *Lignum sanctum*, fit to cure the pox. All these Ilands and others there abouts, which are many, have a goodly and pleasant aspect, for that throughout the yeere, they are beautified with grasse and greene trees, so as they cannot discerne when it is Autumne or Summer, by reason of continuall moisture ioyned to the heate of the burning Zone. And although this land be of a great circuite, yet are there few dwellings, for that of it selfe it engenders great Arcabucos, as they call them, which be Groves or very thicke Coppices; and on the plaines there are many marishes and bogges. They give yet another notable reason, why they are so smally peopled, for that there have remained few naturall Indians, through the inconsideratenesse and disorder of the first Conquerors that peopled it; and therefore, for the most part, they vse Negros, but they cost deere, being very fit to till the land. There growes neither bread nor wine in these Ilands, for that the too great fertilitie and the vice of the soile, suffers them not to seede, but castes all forth in grasse, very vneaqually. There are no olive trees, at the least they beare no olives, but manie greene leaves pleasant to the view, which beare no fruite. The bread they vse is of cassava, whereof we shall heereafter speake. There is

gold in the riuers of these Ilands, which some draw foorth, but in small quantitie. I was little lesse then a yeere in these ilands, and as it hath beene told me of the maine land of the Indies, where I have not been, as in Florida, Nicaragua, Guatimala, and others, it is in a maner of this temper, as I have described; yet have I not set downe every particular of Nature in these Provinces of the firme land, having no perfect knowledge thereof. The Countrie which doth most resemble Spaine, and the regions of Europe, in all the West Indies, is the realme of Chille, which is without the generall rule of these other Provinces, being seated without the burning Zone, and the Tropicke of Capricorne. This land of it selfe is coole and fertile, and brings forth all kindes of fruites that be in Spaine; it yeeldes great aboundance of bread and wine, and aboundes in pastures and cattell. The aire is wholesome and cleere, temperate betwixt heate and cold, winter and summer are very distinct, and there they finde great store of very fine gold. Yet this land is poore and smally peopled, by reason of their continuall warre with the Araucanos and their associates, being a rough people and friends to libertie.

Chap. xxiii.—*Of the vnknowne Land, and the diversitie of a whole day betwixt them of the East and the West.*

There are great coniectures, that in the temperate Zone at the Antartike Pole, there are great and fertile lands; but to this day they are not discovered, neither do they know any other land in this Zone, but that of Chille, and some part of that land which runnes from Ethiopia, to the Cape of Good Hope, as hath been said in the first booke; neither is it knowne if there be any habitations in the other two Zones of the Poles, and whether the land continues

and stretcheth to that which is towards the Antartike or South Pole. Neither do we know the land that lies beyond the straight of Magellan, for that the greatest height yet discovered is in fiftie-six degrees, as hath beene formerly saide; and toward the Artike or Northerne Pole, it is not knowne how farre the land extendes, which runnes beyond the Cape of Mendoçino, and the Californias, nor the bounds and end of Florida, neither yet how farre it extendes to the West. Of late, they have discovered a new land, which they call New Mexico, where they say is much people that speake the Mexicaine tongue. The Philippines and the following Ilands, as some report that know it by experience, ranne above nine hundred leagues. But to intreate of China, Cochinchina, Syam, and other regions which are of the East Indies, were contrary to my purpose, which is onely to discourse of the West; nay, they are ignorant of the greatest part of America, which lies betwixt Peru and Bresill, although the bounds be knowne of all sides, wherein there is diversitie of opinions; some say it is a drowned land, full of Lakes and waterie places; others affirme there are great and flourishing kingdomes, imagining there be the Paytiti, the Dorado, and the Cæsars, where they say are wonderfull things. I have heard one of our Company say, a man worthy of credit, that hee had seene great dwellings there, and the waies as much beaten, as those betwixt Salamanca and Valladolid; the which he did see, whenas Pedro de Ursua, and after, those that succeeded him, made their entrie and discoverie by the great river of Amazons, who beleeving that the Dorado which they sought was farther off, cared not to inhabite there, and after went both without the Dorado, which they could not finde, and this great Province which they left. To speake the truth, the habitations of America are to this day vnknowne, except the extreamities, which are Peru, Bresill, and that part where the land beginnes to straighten, which is the

Lib. iii.

river of Silver, then Tucuman, which makes the round to Chille and Charcas. Of late we have vnderstood by letters from some of ours which go to Santa Cruz de la Sierra, that they go discovering of great Provinces and dwellings, betwixt Bresill and Peru. Time will reveile them, for as at this day the care and courage of men is great, to compasse the world from one part to another; so wee may beleeve, that as they have discovered that which is now knowne, they may likewise lay open that which remaines, to the end the Gospell may be preached to the whole world, seeing the two Crownes of Portugall and Castille, have met by the East and West, ioyning their discoveries together, which in truth is a matter to be observed, that the one is come to China and Iappan by the East, and the other to the Philippines, which are neighbours, and almost ioyning vnto China, by the West; for from the Ilands of Lusson, which is the chiefe of the Philippines, in the which is the Citie of Manilla, vnto Macao, which is in the Ile of Canton, are but foure score or a hundred leagues, and yet we finde it strange, that notwithstanding this small distance from the one to the other, yet according to their accoumpt, there is a daies difference betwixt them; so as it is Sunday at Macao, whenas it is but Saterday at Manilla, and so of the rest. Those of Macao and of China have one day advanced before the Philippines. It happened to father Alonso Sanches, of whom mention is made before, that parting from the Philippines, he arrived at Macao the second day of Maie, according to their computation, and going to say the Masse of S. Athanasius, he found they did celebrate the feast of the invention of the holy Crosse, for that they did then reckon the third of Maie. The like happened vnto him in another voyage beyond it.

Some have found this alteration and diversitie strange, supposing that the fault proceedes from the one or the other, the which is not so; but it is a true and well

observed computation, for according to the difference of waies where they have beene, we must necessarily say, that when they meete, there must bee difference of a day; the reason is, for that sailing from West to East, they alwaies gaine of the day, finding the sunne rising sooner; and contrariwise, those that saile from East to West, do alwaies loose of the day, for that the Sunne riseth later vnto them; and as they approach neerer the East or the West, they have the day longer or shorter. In Peru, which is westward in respect of Spaine, they are above sixe houres behinde; so as when it is noone in Spaine, it is morning at Peru; and when it is morning heere, it is mid-night there. I have made certaine proofe thereof, by the computation of Eclipses of the Sunne and Moone. Now that the Portugalls have made their navigations from West to East, and the Castillians from east to west, when they came to ioyne and meete at the Philippines and Macao, the one have gained twelve houres, and the other hath lost as much; so as at one instant, and in one time, they finde the difference of twentie houres, which is a whole day; so as necessarily, the one are at the third of Maie, whenas the others accoumpt but the second; and whenas the one doth fast for Easter eve, the others eate flesh for the day of the resurrection. And if we will imagine that they passe farther, turning once againe about the world, vsing the same computation, when they should returne to ioyne together, they should finde by the same accoumpt, two daies difference; for as I have saide, those that go to the Sunne rising, accoumpt the day sooner, for that the Sunne riseth to them sooner, and those that go to the setting, accoumpt the day later, for that it goes from them later; finally, the diversitie of the noone tide causeth the divers reckoning of the day. And now for as much as those that doe saile from East to West, change their noone tide without perceiving it, and yet still follow the same computation they did when they parted, of

necessitie, having made the compasse of the worlde, they must finde the want of a whole day in their computation.

Chap. xxiv.—*Of the Volcanos or Vents of fire.*

Although we finde vents of fire in other places, as mount Ætna and Wesuvio, which now they call mount Soma, yet is that notable which is found at the Indies. Ordinarily these Volcanos be rockes or pikes of most high mountaines, which raise themselves above the toppes of all other mountaines. Upon their toppes they have a plaine, and in the midst thereof a pitte or great mouth, which discends even vnto the foote thereof—a thing verie terrible to beholde. Out of these mouthes there issues smoke, and sometimes fire; some cast little smoke, and have in a maner no force of Volcanos, as that of Arequipa, which is of an vnmeasurable height, and almost all sand. It cannot be mounted vp in lesse then two daies, yet they have not found any shew of fire, but onely the reliques of some sacrifices which the Indians made while they were Gentiles, and sometimes it doth cause a little smoke. The Volcan of Mexico, which is neere to the Puebla de los Angeles, is likewise of an admirable height, whereas they mount thirty leagues in turning; from this Volcan issueth not continually, but sometimes, almost every day a great exhalation or whirlwinde of smoake, which ascends directly vp, like to the shot of a Crossebow, and growes after like to a great plume of feathers, vntill it ceaseth quite, and is presently converted into an obscure and darke cloude. Most commonly it riseth in the morning after the Sunne rising, and at night when it setteth, although I have seene it breake out at other times. Sometimes it dooth cast foorth great store of ashes after this smoke. They have not yet seene any fire come from it, yet they feare it will issue forth and burne al the land round about, which

is the best of all the kingdome. And they holde it for certaine that there is some correspondencie betwixt this Vulcan and the Sierra of Tlascala, which is neere vnto it, that causeth the great thunders and lightnings they doe commonly heare and see in those parts.

Some Spaniards have mounted vppe to this Volcano, and given notice of the mine of sulphre to make powder thereof. Cortes reportes the care hee had to discover what was in this Volcano. The Volcans of Guatimala are more renowned, as well for their greatnesse and height, which those that saile in the South Sea discover a farre off, as for the violence and terrour of the fire it casts. The three and twentieth day of December, in the yeere of our Lord God one thousand five hundred eighty and sixe, almost all the Cittie of Guatimala fell with an earthquake, and some people slain. This Volcano had then, sixe moneths together, day and night, cast out from the toppe, and vomited as it were a floud of fire, the substance falling vpon the sides of the Volcan was turned into ashes, like vnto burnt earth—a thing passing man's iudgement to conceive how it could cast so much matter from its centre during sixe moneths, being accustomed to caste smoke alone, and that sometimes with small flashes. This was written vnto me, being at Mexico, by a Secretarie of the Audienca of Guatimala, a man worthy of credite, and at that time it had not ceased to cast out fire. This yeere past, in Quito, I being in the Cittie of Kings, the Volcano which is neere therevnto, cast such aboundance of ashes, that in many leagues compasse thereabout it darkned the light of the day, and there fell such store in Quito as they were not able to goe in the streetes. There have beene other Volcanos seene which cast neither smoake, flame, nor yet ashes, but in the botome they are seene to burn with a quicke fire without dying; such a one was that which in our time a covetous and greedy Priest seeing, perswaded himselfe that they were heapes of golde hee did see burn-

Lib. iii.

ing, imagining it coulde be no other matter or substance which had burnt so many yeeres and not consumed. And in this conceit hee made certaine kettles with chaines, and an instrument to gather and drawe vp the golde out of this pitte or Volcano; but the fire scorned him, for no sooner did his yron chaine and caldron approach neere the fire, but sodainely they were broken in peeces. Yet some tolde mee that this man was still obstinate, seeking other inventions for to drawe out this golde as he imagined.

Chap. xxv.—*What should be the reason why the fire and smoake continues so long in these Volcanos?*

There is no neede now to make any mention of other Volcanos, seeing wee may well vnderstand by the former what they are; yet is it woorthy the search what should be the cause why the fire and smoake continues in these Volcanos, for that it seemes a prodigious thing, yea, against the course of nature, to vomite and cast out so many flames. Whence dooth this matter proceede, or whether it be ingendred within the bowelles thereof? Some have held opinion that these Volcanos consume the inner substance they have of nature; and for this reason they beleeve that naturally they shal end whenas they have consumed the fuell (as a man may say) that is within them. According to which opinion we see at this day some mountaines and rockes, from whence they drawe a burnt stone which is light, but very hard, and is excellent to builde with, as that which is carried to Mexico. And in effect there are some shewes of that which hath beene spoken, that these mountaines or rockes hadde sometimes a naturall fire, which hath died after the matter was consumed; and so these stones have remayned burnt and pierced with the fire as we see. For my part I will not contradict it, that in

those places there hath not bin fire sometimes, or volcanos. But there is some difficultie to beleeve it should be so in all volcanos, considering the matter they cast out is almost infinite, and that being gathered together it could not be contained in the same concavitie from whence it goes. Moreover, there are some volcanos, that in hundreds, yea, thousands of yeeres, are alwaies of one fashion, casting out continually smoke, fire, and ashes. Plinie the Historiographer of naturall things (as the other Plinie his nephew reports) searching out the secret how this should passe, and approching too neere th' exhalation of fire of one of these volcanos, died, and thinking by his diligence to find an end thereof, had an end of his life. For my parte, vpon this consideration I think, that as ther are places in th' earth whose vertue is to draw vaporous matter and to convert it into water, which be the fountaines that alwayes runne, and have alwayes matter to make them runne,[1] for that they drawe vnto them the substance of water: in like sorte there are places that have the propertie to draw vnto them hote exhalations, and to convert them into fire and smoke which, by their force and violence, cast out other thicke matter which dissolves into ashes, into pumice stone, or such like substance. For a sufficient argument to prove it to be so in these volcanos, they sometimes cast smoke, and not alwaies, and sometimes fire, and not alwaies, which is according to what it can drawe vnto it, and digest, as the fountaines which in winter abound and in summer decrease; yea, some are quite dried vp, according to the force and vigour they have and the matter that is presented: even so it is of these volcanos, which cast fire more or lesse at certaine seasons. Others say that it is hell fire which issueth there, to serve as a warning, thereby to consider what is in the other life: but if hell (as Divines holde) be in the centre of the earth, the which containes in diameter

[1] "Que siempre manan, y siempre tienen de que manar."

Lib. iii.

above two thousand leagues, we can not iudge that this fire is from the centre; for that hell fire (as Saint Basil and other Saints teach) is very different from this which wee see, that it is without light, and burneth without comparison much more then ours. And therefore I conclude, that what I have saide, seemes to me more reasonable.

Basil, psal. xxviii, and in Hexa.

Chap. xxvi.—*Of Earthquakes.*

Some have held that, from these Volcanos which are at the Indies, the earthquakes proceed, being very common there; but for that they ordinarily chance in places farre from those Volcanos it can not be the totall cause. It is true, they have a certaine simpathy one with another, for that the hote exhalations which engender in the inner concavities of the earth, seeme to be the materiall substance of fire in the Volcanos, whereby there kindleth an other more grosse matter, and makes these shewes of flame and smoke that come forth. And these exhalations (finding no easie issue in the earth) move it to issue forth with great violence, wherby we heare that horrible noise vnder the earth, and likewise the shaking of the earth, being stirred with this burning exhalation; even as gunpowder in mines, having fire put to it, breakes rockes and walles: and as the chesnut laid into the fire leapes and breakes with a noyse, whenas it casts forth the aire (which is contained within the huske) by the force of the fire: even so, these Earthquakes do most commonly happen in places neere the water or sea. As we see in Europe and at the Indies, that townes and cities farthest from the sea and waters are least afflicted therewith; and contrariwise, those that are seated vpon portes of the sea, vpon rivers, the sea coast, and places neere vnto them, feele most this calamitie. There hath happened in Peru (the which is wonderfull, and worthy to be noted) Earthquakes which have runne from Chile vnto Quito, and

that is above fiue hundred leagues, I say the greatest that ever I heard speake of, for lesser be more common there. Vpon the coast of Chile (I remember not well in what yeare) there was so terrible an earthquake, as it overturned whole mountains, and thereby stopped the course of rivers which it converted into lakes, it beat downe townes, and slew a great number of people, causing the sea to leave her place some leagues, so as the shippes remained on drie ground, farre from the ordinary roade, with many other heavie and horrible things. And, as I well remember, they say this trouble and motion, caused by the earthquake, ranne three hundred leagues alongest the coast. Soon after, which was in the yeere eighty two, happened that earthquake of Arequipa, which in a manner overthrew the whole citie. Since, in the yeere eightie sixe, the nineth of Iune, fell an other earthquake in the cittie of Kings, the which, as the Viceroy did write, hadde runne a hundred three score and tenne leagues alongest the coast, and overthwart in the Sierra fiftie leagues. The mercy of the Lord was great in this earth quake, to forewarne the people by a great noyse which they heard a little before the earthquake, who, taught by former experiences, presently put themselves in safetie, leaving their houses, streetes, and gardins, to go into the fieldes; so as, although it ruined a great parte of the Cittie, and of the chiefest buildings, yet there died not above fifteene or twenty persons of all the inhabitants. It caused the like trouble and motion at sea, as it had done at Chile, which happened presently after the earthquake, so as they might see the sea furiously to flie out of her boundes, and to runne neere two leagues into the land, rising above fourteene fadome: it covered all that plaine, so as the ditches and peeces of wood that were there swamme in the water. There was yet an other earthquake in the realme and Cittie of Quito; and it seemes all these notable earthquakes vppon that coast have succeeded one

Lib. iii.

an other by order, as in trueth it is subiect to these inconveniences. And therefore, although vpon the coast of Peru there be no torments from heaven, as thunder and lightning, yet are they not without feare vppon the land: and so everie one hath before his eies the Heraults of divine Iustice, to moove him to feare God. For, as the Scripture saith, *Fecit hæc vt timeatur.* Returning then, to our purpose, I say the sea coast is most subiect to these earthquakes, the reason is, in my iudgement, for that the water dooth stop the conduites and passages of the earth, by which the hote exhalations should passe, which are engendered there. And also the humiditie thickning the superficies of the earth dooth cause the fumes and hot exhalations to goe close together and incounter violently in the bowells of the earth, which doe afterwards breake forth.

Some have observed that such earthquakes have vsually hapned whenas a rainie season falles after some drie yeeres. Wherevpon they say, that the Earthquakes are most rare where are most welles, the which is approoved by experience. Those of the Cittie of Mexico hold opinion, that the Lake whereon it is seated, is the cause of the Earthquakes that happen there, although they be not very violent: and it is most certaine that the Townes and Provinces farre within the land, and farthest from the sea, receive sometimes great losses by these earthquakes, as the Cittie of Chachapoyas at the Indies, and in Italie that of Ferrara, although vpon this subiect; it seemes this latter, being neere to a river, and not farre from the Adriatic sea, should rather be numbred among the sea-Townes. In the yeere of our Lord one thousand five hundred eightie and one, in Chuqui-apu, a Cittie of Peru, otherwise called La Paz, there hapned a strange accident touching this subiect. A village called Angoango,[1] where many Indians dwelt that

[1] Ancu-ancu, a hamlet in the parish of Achacache, which is the capital of the province of Omasuyos, on the eastern side of lake Titicaca.

were sorcerers and idolatrers, fell sodainely to ruine, so as a great parte thereof was raised vp and carried away, and many of the Indians smothered, and that which seems incredible (yet testified by men of credit) the earth that was ruined and so beaten downe, did runne and slide vpon the land for the space of a league and a halfe, as it had beene water or wax molten, so as it stopt and filled vppe a Lake, and remayned so spread over the whole countrey.

Chap. xxvii.—*How the land and sea imbrace one an other.*

I will end with this element of earth, vniting it to the precedent of water, whose order and embracing is truely of it selfe admirable. These two elements have one spheare divided betweene them, and entertaine and embrace one another in a thousand sortes and maners. In some places the water encounters the land furiously as an enemy, and in other places it invirons it after a sweete and amiable manner. There are partes whereas the sea enters far within the land, as comming to visite it; and in other partes the land makes restitution, casting his capes, points, and tongues farre into the sea, piercing into the bowelles thereof. In some partes one element ends and another beginnes, yeelding by degrees one vnto another. In some places, where they ioyne, it is exceeding deepe, as in the Ilands of the South Sea, and in those of the North, whereas the shippes ride close to the land; and, although they found three score and tenne, yea foure score fadomes, yet do they finde no bottome, which makes men coniecture that these are pikes or poynts of land which rise vp from the bottome, a matter woorthy of great admiration. Heerevpon a very expert Pilote said vnto me, that the Ilands which they call of Woolves, and others, that lie at the entry of the coast of New Spaine, beeing called Cocos, were of this manner.

Moreover, there is a place in the midst of the great Ocean, without the view of land, and many leagues from it, where are seene as it were two towers or pikes of a very high elevated rocke, rising out of the middest of the sea, and yet ioyning vnto it they finde no bottome. No man can yet perfectly comprehend, nor conceive the full and perfect forme of the land at the Indies, the boundes being not wholly discovered to this day: yet wee may guesse that it is proportioned like a heart with the lungs. The broadest of this heart is from Bresill to Peru, the poynt at the straight of Magellan, and the top where it ends is the firme land, and there the continent begins by little and litle to extend it selfe vntill wee come to the height of Florida and the vpper landes, which are not yet well discovered. We may vnderstand other particularities of this land at the Indies, by the Commentaries which the Spaniards have written of their successe and discoveries; and amongest the rest, of the Peregrination which I have written; which in trueth is strange, and may give a great light. This, in my opinion, may suffice at this time to give som knowledge of things at the Indies, touching the common elements, of the which all parts of the worlde are famed.

THE FOVRTH BOOKE

Of the Naturall and Morall Historie of the Indies.

Chap. 1.—*Of three kindes of mixtures or compounds, of the which I must intreate in this Historie.*

Having intreated in the former booke of that which concernes the Elements, and the simples of the Indies, in this present booke we will discourse of mixtures and compounds, seeming fit for the subject we shall treate of. And although there be many other sundrie kindes, yet we will reduce this matter into three, which are Mettalls, Plants, and Beasts. Mettalls are (as plants) hidden and buried in the bowels of the earth, which have some conformitie in themselves, in the forme and maner of their production; for that wee see and discover even in them, branches, and as it were a bodie, from whence they grow and proceede, which are the greater veines and the lesse, so as they have a knitting in themselves: and it seemes properly that these minerales grow like vnto plants, not that they have any inward vegitative life, being onely proper to plants: but they are engendered in the bowels of the earth, by the vertue and force of the Sunne and other planets, and in long continuance of time they increase and multiply after the manner of plants. And even as mettalls be plants hidden in the earth, so we may say, that plants be living creatures fixed in one place, whose life is maintained by the nourishment which Nature furnisheth from their first beginning. But living creatures surpasse plants, in that

Lib. iv. they have a more perfect being; and therefore have neede of a more perfect foode and nourishment; for the search whereof, Nature hath given them a moving and feeling to discover and discerne it. So as the rough and barren earth is as a substance and nutriment for mettalls; and that which is fertile and better seasoned a nourishment for plants. The same plants serve as a nourishment for living creatures, and the plants and living creatures together as a nourishment for men; the inferiour nature alwaies serving for the maintenance and sustentation of the superiour, and the lesse perfect yeelding vnto the more perfect: whereby we may see how much it wants, that gold and silver and other things which men so much esteeme by their covetousnesse, should be the happiness of man, wherevnto he should tend, seeing they be so many degrees in qualitie inferior to man, who hath been created and made onely to be a subject to serve the vniversall Creator of all things, as his proper end and perfect rest, and to which man, all other things in this world, were not propounded or left, but to gaine this last end. Who so would consider of things created, and discourse according to this Philosophie, might draw some fruite from the knowledge and consideration thereof, making vse of them to know and glorifie their Author. But he that would passe on farther to the knowledge of their properties and profits, and would curiously search them out, hee shall finde in these creatures, that which the Wiseman saies, that they are snares and pitfalles to the feete of fooles and ignorant, into the which they fall and loose themselves daily. To this intent therefore, and that the Creator may be glorified in his creatures, I pretend to speake of some things in this Booke, whereof there are many at the Indies worth the report, touching mettalls, plants, and beasts, which are proper and peculiar in those parts. But for that it were a great worke to treate thereof exactly, and requires greater learning and knowledge; yea, much more

Sap. xiv.

leisure than I have, my intent is only to treate of some things succinctly, the which I have observed, as well by experience, as the report of men of credite, touching these three things which I have propounded, leaving to men more curious and diligent to treate more amply of these matters.

Chap. ii.—*Of the aboundance and great quantitie of Mettall at the West Indies.*

The wisedome of God hath made mettalls for phisicke, and for defence, for ornament, and for instruments for the worke of men, of which foure things we may easily yeelde examples, but the principall end of mettalls, and the last thereof, is, for that the life of man hath not onely neede of nourishment as the beasts, but also he must worke and labour according vnto the reason and capacitie which the Creator hath given him. And as mans understanding doth apply itself to diverse artes and faculties, so the same Author hath given order, that hee should finde matter and subiect to diverse artes, for the conservation, reparation, suretie, ornament and exaltation of his workes. The diversitie therefore of mettalls, which the Creator hath shut vp in the closets and concavities of the earth, is such and so great that man drawes profit and commoditie from everie one of them. Some serve for curing of diseases, others for armes and for defence against the enemies, some are for ornament and beautifying of our persons and houses, and others are fit to make vessels and yron-workes, with divers fashions of instruments, which the industry of man hath found out and put in practise. But above all the vses of mettalls, which bee simple and natural, the communication and commerce of men hath found out one, which is the vse of money, the which (as the Philosopher saieth) is the

Lib. iv. measure of all things. And although naturally, and of it selfe, it be but one onely thing, yet in value and estimation, wee may say that it is all things. Mony is vnto vs as it weare, meate, clothing, house, horse, and generally whatsoever man hath neede of. By this meanes all obeyes to mony, and as the Wiseman saith, to finde an invention that one thing should be all. Men, guided or thrust forward by a naturall instinct, choose the thing most durable and most maniable, which is mettall, and amongst mettalls, gave them the preheminence in this invention of mony, which of their nature were most durable and incorruptible, which is silver and golde. The which have bin in esteeme, not onlie amongst the Hebrewes, Assirians, Greekes, Romans, and other nations of Europe and Asia, but also amongst the most retyred and barbarous nations of the world, as by the Indians both East and West, where gold and silver is held in great esteeme, imploying it for the workes of their Temples and Pallaces, and for the attyring and ornament of kings and great personages. And although we have found some Barbarians, which know neither gold nor silver, as it is reported of those of Florida, which tooke the bagges and sackes wherein the silver was, the which they cast vpon the ground, and left as a thing vnprofitable. And Plinie likewise writes of the Babitacques, which abhorred gold, and therefore they buried it, to the end that no man should vse it. But at this day they finde few of these Floridians or Babitacques, but great numbers of such as esteeme, seeke, and make accoumpt of gold and silver, having no neede to learne it of those who go from Europe. It is true, there covetousnesse is not yet come to the height of ours, neither have they so much worshipped gold and silver, although they were Idolaters, as some blinde Christians, who have committed many great out-rages for gold and silver. Yet is it a thing very worthy of consideration, that the wisedome of the Eternall Lord would inrich those partes

Arist. v, Ethio., cap. 5.

Eccles. x.

of the world which are most remote, and which are peopled with men of lesse civilitie and governement, planting there great store of mines, and in the greatest aboundance that ever were, thereby to invite men to search out those lands, and to possesse them, to the end that by this occasion, they might plant religion, and the worship of the true God, amongst those that knew it not, fulfilling therein the prophecie of Isaiah, saying, that the Church should stretch forth her boundes, not onely to the right, but also to the left: which is vnderstood as S. Augustine saieth, that the Gospell should be spread abroad, not onely by those that sincerely, and with a true and perfect charity, preach and declare it, but also by those that publish it, tending to temporall ends; whereby wee see, that the Indian land, being more aboundant in mines and riches, hath beene in our age best instructed in the Christian religion, the Lord vsing our desires and inclinations to serve his soveraigne intentions. Herevpon a Wise man said, that what a father doth to marie his daughter wel, is to give her a great portion in mariage; the like hath God done for this land so rough and laboursome, giving it great riches in mines, that by this meanes it might be the more sought after. At the West Indies then there are a great store of mines of all sortes of mettalls, as copper, yron, lead, tinne, quicke-silver, silver and gold: and amongst all the regions and partes of the Indies, the realmes of Peru abound most in these mettalls, especially with gold, silver, quicke-silver, or mercurie, whereof they have found great store, and daily discover new mines. And without doubt, according to the qualitie of the earth, those which are to discover, are without comparison farre more in number then those which are yet discovered: yea, it seemes that all the land is sowed with these mettalls, more then any other in the world that is yet knowne vnto us, or that ancient writers have made mention of.

Isaiah liv.

Aug., lib. v, de comor. evang., cap. 31.

CHAP. III.—*Of the qualitie and nature of the earth where the mettalls are found, and that all these mettalls are not imployed at the Indies, and how the Indians vsed them.*

LIB. IV.

The reason why there is so great aboundance of mettalls at the Indies (especially at the West of Peru, as I have saide) is the will of the Creator, who hath imparted his giftes as it pleased him. But comming to a naturall and philosophicall reason, it is very true, which Philon a wise man writes, saying, that gold, silver, and mettalls grow naturally in land that is most barren and vnfruitefull. And we see, that in lands of good temperature, the which are fertile with grasse and fruites, there are seldome found any mines; for that Nature is contented to give them vigour to bring forth fruites more necessarie for the preservation and maintenance of the life of beasts and men. And contrariwise to lands that are very rough, drie, and barren (as in the highest mountains and inaccessible rockes of a rough temper) they finde mines of silver, of quicke-silver, and of gold; and all those riches (which are come into Spaine since the West Indies were discovered) have beene drawne out of such places which are rough and full, bare and fruitlesse: yet the taste of this mony makes these places pleasing and agreeable, yea, well inhabited with numbers of people. And although there be, as I have said, many mines of all kinds of mettalls as at the Indies, yet they vse none but those of gold and silver, and as much quicke-silver as is necessarie to refine their gold and silver. They carrie yron thither from Spaine and China. As for copper, the Indians have drawne of it, and vsed it for their armes, the which were not vsually of yron, but of copper. Since the Spaniards possessed the Indies, they have drawne very little, neither do they take the paine to seeke out these mines, although there be many busying themselves in the search of richer

Philo., lib. v, de Genes. mund.

Euseb., lib. viii, de prepar. evang., ix.

and more precious mettalls, wherein they spend their time and labour. They vse no other mettalls, as copper and yron, but only that which is sent them from Spaine, or that which remaines of the refining of gold and silver. We finde not that the Indians in former times vsed gold, silver, or any other mettall for mony, and for the price of thïngs, but only for ornament, as hath been said, whereof there was great quantitie in their Temples, Palaces, and Toombes, with a thousand kindes of vessels of gold and silver, which they had. They vsed no gold nor silver to trafficke or buy withall, but did change and trucke one thing for another, as Homer and Plinie report of the Ancients. They had some other things of greater esteeme which went current amongst them for price, and in steede of coine; and vnto this day this custome continues amongst the Indians, as in the Provinces of Mexico, in steede of money they vse cacao, which is a small fruit, and therewith buy what they will. In Peru they vse coca to the same end, the which is a leafe the Indians esteeme much, as in Paraguay, they have stamps of yron for coine, and cotten woven in Santa Cruz de la Sierra. Finally, the maner of the Indians trafficke, and their buying and selling, was to exchange, and give things for things; and although there were great martes and famous faires, yet had they no neede of mony, nor of brokers, for that every one had learned what he was to give in exchange for every kinde of merchandise. Since the Spaniards entred, the Indians have vsed gold and silver to buy withall; and in the beginning there was no coine, but silver by weight was their price and mony, as they report of the ancient Romans. Since, for a greater benefite, they have forged coine in Mexico and Peru, yet vnto this day they have not in the West Indies coined any mony of copper or other mettall but only of silver and golde; for the richnes of that Countrie hath not admitted nor received

Plin., lib. xxxiii, cap. 3.

Plin., lib. xxxiii, c. 4.

Lib. iv.

such mony as they call bullion, nor other kindes of alloy, which they use in Italie, and in other Provinces of Europe. Although in some Ilands of the Indies, as San Domingo and Puerto Rico, they vse coine of leather which is square, the which are currant onely in those Ilands, having little silver or gold. I say little, although there be much, for that no man digges it and refines it. But for that the riches of the Indies, and their manner to labour in the mines, consistes of golde, silver, and quicke-silver. I will speake something of these three mettalls, leaving the rest for this time.

Chap. iv.—*Of gold which they dig and refine at the Indies.*

Gold amongst other mettals hath bin always held the most excellent, and with reason, being the most durable and incorruptible of all others; for fire which consumes and diminishes the rest amends it, and brings it to perfection. Golde which hath often passed through the fire, keepes his colour, and is most fine and pure, which properly is called, as Plinie saith, Obriso, whereof the Scripture makes so often mention, and vse, which consumeth all other mettalles, as the same Plinie saith, dooth not any thing waste golde, nor yet hurte it, neither is it eaten nor groweth olde. And although his substance and body be firme and solide, yet dooth it yielde and bow woonderfully; the beaters and drawers of golde knowe well the force it hath to bee drawen out without breaking. All which things well considered, with other excellent properties, will give men of iudgment to vnderstand, wherefore the holie Scripture dooth compare Charitie to golde. To conclude, there is little neede to relate the excellencies thereof to make it more desirable. For the greatest excellencie it hath, is to be knowne, as it is, amongst men, for the supreame power

Plin., lib. xxxiii, c. 3.

Apoc. iii and xxi. Cant. iii. Psalm lxvii. 3 Reg. vi.

and greatnesse of the worlde. Coming therefore to our subject; at the Indies there is great abundance of this mettall, and it is wel knowne by approved histories that the Yncas of Peru did not content themselves with great and small vessels of gold, as pots, cups, goblets, and flagons; yea with kowles or great vessels, but they had chaires also and litters of massie golde, and in their temples they had set vppe manie Images of pure gold, whereof they find some yet at Mexico, but not such store as when the first Conquerours came into the one and the other kingdome, who found great treasure, and without doubt there was much more hidden in the arth by the Indians. It would seem ridiculous to reporte that they have made their horse shooes of silver for want of yron, and that they have payd three hundred crownes for a bottle of wine, and other strange things; and yet in trueth this hath come to passe, yea and greater matters. They drawe golde in those partes after three sorts, or at the least, I have seene all three vsed. For either they find gold in graines, in powder, or in stone. They do call golde in graines, small morsels of gold, which they finde whole, without mixture of any other mettall, which hath no neede of melting or refining in the fire: and they call them pippins, for that commonly they are like to pippins, or seeds of melons, or pompions: and that wherof Iob speakes, when he saies, *glebæ illius aurum*, though sometimes there be greater, and such as I have seene weighed many poundes. It is the excellencie of this mettall alone, as Plinie affirmes, to be found thus pure and perfect, which is not seene in any other mettalles, which are alwayes earthy, and have a scumme, and neede purging by the fire: I have likewise seene silver like to hoar frost. There is an other kinde which the Indians call *papas;* and sometimes they find peeces very fine and pure, like to small round rootes, the which is rare in that mettall, but vsual in gold. They

Iob xxviii.

Plin., lib. xxxiv, ca. 4.

Lib. iv. finde little of this golde in pippin, in respect of the other kindes. Golde in stone is a veine of gold that groweth or ingendereth within the stone or flint, as I have seene in the mines of Saruma, within the government of Salinas, very great stones pierced and intermixed with gold; others that were halfe gold, and half stone. The golde which groweth in this manner is found in pittes or mines, which have their veines like to the silver mines, but it is very hard to drawe it foorth: Agatarchides writes in his first booke of the *Erythrean* or red sea (as Phocion reportes in his *Bibliotheca*), of the manner and fashion to refine golde, the which the antient Kings of Egypt were wont to vse, and it is a strange thing to see how that which is written resembles properly to the manner they vse at this day in refining these mettalls of golde and silver. The greatest quantitie of golde which is drawne at the Indies is that in powder, the which is found in streames and places where much water hath passed, because the rivers of India abound in this kinde of golde. As the Ancients for this occasion did celebrate the river of Tagus in Spain, Pactolus in Asia, and Ganges in the East Indies, and called *Ramenta auri*, what we call golde in powder, and of this sort is the greatest quantitie of golde they have at this day. At this present, in the Ilands of Barlovent, Hispaniola, Cuba, and Puerto Rico, there hath beene, and is great quantity in the rivers, but they bring little from thence into Spaine, for want of the naturall inhabitants of the countrie, and the difficultie to drawe it. There is great aboundance in the kingdome of Chilie, of Quito, and in the new realme of Grenada.

The most famous golde is that of Caravaya in Peru, and of Valdivia in Chille, for that it riseth with his alloy and perfection, which is twenty three carats and a halfe, and sometimes more. They make accompt likewise of the gold of Veragua to be very fine. They bring much golde to

Mexico from the Philippines, and China, but commonly it is weake, and of base alloy. Gold is commonly found mixt with silver or with copper, but that which is mixed with silver is commonly of fewer carats then that which is mixed with copper. If there be a fift parte of silver, Plinie saieth, it is then properly called Electrum, which hath the property to shine more at the light of the fire then fine gold or fine silver. That which is incorporate with copper, is commonly of a higher value. They refine powdred golde in basens, washing it in many waters until the sand falles from it, and the golde as most heavie remaineth in the bottome. They refine it likewise with quicke-silver and strong water, for that the allume whereof they make this water hath the virtue to separate gold from drosse, or from other mettalls. After it is purified and molten, they make brickes or small barres to carry it vnto Spain ; for being in powder they cannot transport it from the Indies, for they can neither custome it, marke it, nor take assay, until it be molten. The foresaide Historiographer reporteth that Spaine above all other Countries of the world did abound in gold and silver, especially Galicia and Portugall, and above all the Asturias, whence hee saieth they brought every yeere twenty thousand pounds of golde, and that they found not so great aboundance in any other place. The which is confirmed in the booke of Maccabees, where it is saide, that amongest the great riches of the Romans, they had in their power the golde and silver of Spaine. At this day the great treasure of Spaine comes from the Indies, wherein the divine Providence hath appoynted one Realme to serve another, which doe imparte their wealth to participate their government for the good the one of the other, in communicating mutually the goodes and graces they doe injoy ; wee can not value nor esteeme the quantitie of gold that is brought from the Indies, but we may well say, it is much more then that which Pliny reports was brought

Lib. iv.

Plin., lib. iii, ca. 4.

Plin., lib. xxxiii, c. 4.

1 Maccab. 8.

Lib. iv.

yeerely from Spaine to Rome. In the fleete where I came, which was in the yeere 1585, the declaration of the firme land was of twelve cassons or chests of golde, every casson at the least weighed four arrobas, that is a hundred weight, and a thousand fifty and sixe marcs from New Spaine, which was for the King only, besides that which came for Merchants and private men being registered, and much that came unregistred. This may suffice touching the golde of the Indies, and now we will speake of silver.

Chap. v.—*Of the Silver at the Indies.*

Iob xxviii.

We reade these wordes in the Booke of Iob, "Silver hath certain beginnings and roots in his veins, and golde hath a setled place, where it ingenders and thickens, yron with digging is drawne out of the earth, and stone molten with heate is turned into copper."[1] Hereby he wisely shewes in few words the nature of silver, gold, yron and copper. We have spoken something of the places where golde is ingendered and congealed, which is either of the foresaide stones in the depth of mountaines, and in the bowells of the earth, or in the sand of rivers and where brookes have runne, or else on the toppes of mountaines, the which golde in powder runnes downe with the water. And this is the common opinion they holde at the Indies. Wherevppon many of the common sort believe that the deluge having drowned all, even to the highest hills, hath beene the cause that at this day they finde this golde in the rivers, and in places so farre off. Now we wil shew how they discover the mines of silver, their veines, rootes, and beginnings whereof Iob speakes.

[1] "Surely there is a vein for the silver, and a place for gold where they fine it."

"Iron is taken out of the earth, and brass is molten out of the stone." —*Job* xxviii, 1, 2.

And first I will say, that the reason why they give silver the second place among all other mettalles is, for that it approacheth neerer to golde then any other, being more durable and lesse indamaged by the fire, and more maniable then any other; yea it passeth golde in brightnesse, beauty and sound, the which is cleere and agreeable, for the colour is more conformable and resembling the light, and the sound more percing, more lively, and more delicate. Likewise there are some places where they value silver more then golde. It is yet an argument to judge that gold is more pretious than other mettalls for that it is found with greater difficultie, and Nature seems more sparing in bringing it foorth, although there be countries, as they say of Chine, where they find golde more easily than silver; yet it is more common and ordinarie to finde silver with more facilitie and greater abundance then gold. The Creator hath furnished the West Indies with so great a treasure of silver, as all that which we reade of in antient Histories and that which is spoken of the mines of Spaine, and other provinces, is not comparable to that we see in those partes. The mines of silver are commonly found in mountaines, and high rockes very desart, although they have sometimes bin found in Plaines and Champaines. There are two different kindes, the one they call straggling, the other fixed and settled. The straggling are peeces of mettall found in certaine places, the which drawne away there is no more found. But the fixed veines are those which have a continuance in depth and length, like to great branches and armes of trees, and when they find anie one of them they commonly finde many in the same place. The maner to purge and refine siluer which the Indians have vsed was by melting, in dissolving this masse of mettall by fire, which casts the earthly drosse aparte, and by his force separates silver from lead, tinne from copper, and other mettalls mixt. To this end they did build small furnaces in places whereas

Lib. iv. the wind did commonly blow, and with wood and cole made their refining, the which furnaces in Peru they call *huayras*. Since the Spaniards entred, besides this manner of refining which they vse to this day, they likewise refine silver with qvick-silver, and draw more by this means then in refining it by fire. For there is some kind of silver mettall found which can by no means be purged and refined by fire, but onely with quicksilver. But this kind of mettall is commonly poore and weake, the which vsually they finde in greatest aboundance. They call that poore which yields least silver and great quantitie of other mettall, and that rich which yieldes most silver. It is strange to see not onely the difference betwixt the refining of mettall by fire, and without it by quicke-silver, but also that some of these mettalles, which are refined by the fire can not well be molten with any artificiall winde as with bellows, but when it is kindled and blowen with the naturall ayre or naturall winde. The metall of the mines of Porco is easily refined with bellowes, and that of the mines of Potosi cannot be molten with bellowes, but only by the breath of their *huayras*, which are small furnaces vpon the sides of the mountaines, built expressly where the winde lies, within the which they melt this metall; and though it be hard to yielde a reason for this difference, yet is it most certaine and approoved by long experience; so as the greedie desire of this mettall, so much valued amongst men, hath made them seek out a thousand gentle inventions and devises, whereof wee will hereafter make mention. The chiefe places of the Indies from whence they draw silver are New Spaine, and Peru; but the mines of Peru farre surpasse the rest; and amongst all others of the worlde, those of Potosi, whereof wee will intreate a little at leasure, being the most famous and remarkeable things at the Indies.

Chap. vi.—*Of the mountaine or hill of Potosi and the discovery thereof.*

The mountaine or hill of Potosi so famous, scituate in the Province of Charcas, in the kingdome of Peru, distant from the Equinoctiall towardes the South or Pole Antartike, 21 degrees and two thirds: so as it falls under the Tropicke, bordering upon the burning Zone, and yet this region is extreamely cold, yea, more then old Castill in the kingdom of Spaine, and more than Flanders itselfe, although by reason it should be hote or temperate, in regard of the height and elevation of the Pole where it is seated. The reason of this so cold a temperature is the height of the mountaine, whereas colde and intemperate windes continually blow, especially that which they call *Tomahaui*, which is boistrous and most cold. It raines most commonly in Iune, Iulie, and August. The ground and soile of this mountaine is drie, cold, and very vnpleasant, yea, altogether barren, which neither engenders nor brings forth any fruite, grasse, nor graine; it is naturally inhabitable, for the intemperature of the heaven, and the barrennes of the earth. But the force of silver, which drawes vnto it the desire of all thinges, hath peopled this mountaine more then any other place in all these Kingdomes, making it so fruitfull of all kindes of meats, as there wantes nothing that can be desired, yea, in great aboundance; and although there be nothing but what is brought by carriage, yet every place aboundes so with fruite, conserves, exquisite wines, silkes, and all other delicats, as it is not inferiour to any other part. This mountaine is of colour darke red, and is in form pleasing at the first sight, resembling perfectly the fashion of a pavilion or of a sugar loafe. It exceedes all other hilles and mountaines about it in height. The way whereby they ascend, is very rough and vneven,

Lib. iv. and yet they go vpon horse-backe. It is round at the top, and at the foote it hath a league in circuite. It containes from the toppe to the bottome 1680 common yardes, the which reduced to the measure of Spanish leagues makes a quarter of a league. At the foote of this mountaine there is another small hill that riseth out of it, in the which there hath beene sometimes mines of metall dispearsed, which were found as it were in purses, and not in fixed or continued veines; yet were they very rich, though few in number. This small rocke was called by the Indians Huayna Potosi, which is young Potosi; at the foote whereof beginnes the dwellings of the Spaniards and Indians, which are come to the riches and worke of Potosi, which dwelling may containe some two leagues in circuite, and the greatest trafficke and commerce of all Peru is in this place. The mines of this mountaine were not digged nor discovered in the time of their Yncas, which were the Lordes of Peru, before the Spaniardes entred, although they had digged and opened the mines of Porco, neere to Potosi, distant onely sixe leagues. The reason might be the want of knowledge thereof, although some do report I know not what fable, that having sometimes laboured to open those mines, a voyce was heard, commaunding them not to touch it, being reserved for others. In trueth they had no knowledge of Potosi, nor of the wealth thereof, till after twelve yeeres that the Spaniards were entred into Peru, the discovery whereof was made in this manner.

An Indian called Hualpa, of the nation of Chumpivilca, which is a province of Cusco, going one day to hunt for venison, passing towardes the west whither the beast was fled, he beganne to runne vppe against the rocke, which at that time was covered and planted with certaine crops they call quinua,[1] and with thick bushes, and as he strived to gette vp a way which was somewhat rough and vneasie,

[1] "Chenopodium quinua."

hee was forced to lay holde vpon a braunch, which issued from a veine of a silver mine (which since they have called La Rica) which he pulled vp, perceiving in the hole or roote thereof mettall, the which hee knew to be very good, by the experience hee had of the mines of Porco: and after finding vpon the ground certaine peeces of mettall, which lay broken and dispersed neere to this veine, being scarse well able to iudge thereof, for that the colour was spoyled and changed by the sunne and raine, he carried it to Porco to trie by the *Huayras* (which is the triall of mettall by fire), and having thereby found the great riches and his happy fortune, he secretly digged and drew mettall out of this veine, not imparting it to any man vntil that an Indian, called Huanca, of the valley of Xauxa, which is vpon the bordures of the Cittie of Kings, who remaining at Porco, neere vnto Hualpa of Chumpivilca, perceved one day that he made a refining, and that his wedges and brickes were greater then such as were vsually made in those places: and also increasing in his expence of apparrell, having till then lived but basely. For this reason, and for that the mettall that his neighbour refined was different from that of Porco, he thought to discover this secret, and wrought so, that although the other kept it as secret as hee could, yet thorow importunitie he was forced to carry him vnto the rocke of Potosi, having enioyed this rich treasure full two months. And then Hualpa the Indian willed Huanca for his part to take a veine, which he had discovered neare to the rich veine, which at this day is called the veine of Diego Centeno, that was not lesse rich, but more hard to digge and to draw foorth; and so by agreement they divided betweene them the richest rocke in the world. It chaunced after, the Indian Huanca finding some difficulty to digge and draw foorth his mettall, being most hard, and the other Hualpa refusing to impart any of his mine vnto him they fell at debate; so as Huanca of Xauxa grieved there-

Lib. iv.

with, and with some other discontents, discovered this secret vnto his maister called Villaroel a Spaniard, who then remained at Porco. This Villaroel, desirous to vnderstand the trueth, went to Potosi, and finding the riches his *Yanacona* or servant had discovered vnto him, caused the Indian Huanca to be inrolled, undertaking with him the saide veine, which was called Centeno, they call it vndertaking, that is as much as to note and mark the mine, and so much ground in circuite for him, which the Lawe graunts vnto those that discover any mine, or vnto those that digge them: by meanes whereof, having discovered them to the Iustice, they remayned Lords of the mine, to dig and draw foorth the silver, as being their owne, paying only their duties vnto the King, which is a fift parte. So as the first discovery and inregistring of the mines of Potosi was the 21 of April, in the yeare of our Lord, one thousand five hundred fortie five, in the territorie of Porco, by the saide Villaroel a Spaniard, and Huanca an Indian. Presently after they discovered another veine, which they called the veine of Tinne, the which is very rich, although it be rough and very painfull to worke in, the mettall being as hard as flint. Since the thirtie day of August in the same yeere of a thousand five hundred forty and five the veine called Mendieta was inrolled, and these are the foure principall veines of Potosi. They say of the rich veine, the first that was discovered, that the metall lay above the ground the height of a launce, like vnto rockes, raising the superficies of the earth, like vnto a crest of three hundred foote long and thirteen foote broade, and that this remained bare and vncovered by the deluge. This veine having resisted the violence and force of the water, as the hardest part. The mettall was so rich as it was halfe silver, and this veine continued in his bounty fiftie or three score *estados*, which is the height of a man, and then it failed. In this maner the mines of Potosi were discovered by the Divine Providence,

who (for the felicitie of Spaine) would have the greatest treasure that ever was in this world discovered at such time whenas the Emperour Charles the fift of famous memorie held the Empire, the kingdomes of Spaine, and the Seigniorie of the Indies. Presently after that the discoverie of Potosi was knowne in Peru, many Spaniardes, and the most parte of the citizens of the city of La Plata, which is eighteene leagues from Potosi, came thither to take mines: yea there came many Indians from divers provinces, especially the *Huayradores* of Porco, so as within a short space it was the best peopled habitation of all the kingdome.

CHAP. VII.—*Of the treasure which is daily drawne from the rocke or mountaine of Potosi.*

I have often doubted if in antient Histories there were found any so rich mines as those we have seen in our time in Peru. If there were ever rich mines in the worlde, and famous for this effect, they have bin those of Spaine, which they of Carthage did inioy, and since, the Romans, the which, as I have saide, are not onely famous and esteemed in prophane bookes, but also in the holy Scriptures. Hee that maketh most particular mention of these mines, at the least that I have seene, is Plinie, who writeth thus in his naturall Historie: "They finde silver in almost all provinces, but that of Spaine is the best, which growes and ingenders in a barren soile, vppon mountaines and rockes. It is a certaine and infallible thing, that in places where they have once discovered any of these veines, there are others not farre off, which is likewise found in all other mettalls, and for this the Greekes, in my opinion, called them mettalls. It is strange that the pits or holes of these mines of Spaine, the which they began to digge in Hannibals time, are at this day, and hold the names of their discoverers. Amongst

Plin., lib. xxxiii, c. 6.

Lib. iv.

these mines, that which Bebelo discovered, which holdes his name vnto this day, was very famous; and they say it yeelded so great riches to Hannibal that everie day they gathered three hundred pounds weight of silver, and vnto this day they have always continued labouring in this mine, so as it is now digd 15 hundred passes deep into the mountaine. Out of which pits, notwithstanding the deapth, the Gascoines that labour in them drawe out the water, that they may worke with more ease, whilest their candelles and lights last, and that in such aboundaunce as it seemes to be a river." Hitherto are the woordes of Pliny, the which I would set downe word by word, the better to content such as know what mines be, seeing that what is tried at this day was then in vse. And truely the riches of this mine of Hannibal vpon the Pirrenean hilles, was great and famous, which the Romans possessed, having continued the work even unto Plinies time, which was about three hundred yeeres. The deapth of this mine was fifteene hundred passes, which is a mile and a halfe: and it was so rich in the beginning, that it was woorth daily to the maister thereof three hundred poundes, at twelve ounces to the pound. But although this were a great treasure, it did not approach neere to that which in our time hath bin found in Potosi: for as it appeareth by the Registers of the house of contraction of that Province, and as many antient men worthie of credit doe testifie, whenas the licentiate Pollo governed that Province, the which was many yeeres after the discovery of this mountaine, they did every saterday enter a hundred and fifty and twoo hundred thousand peeces, whereof the Kings fift amounted to thirty and forty thousand peeces; and for every yeere a million and a halfe, or little lesse. So as according to that computation they did drawe every day from this mine thirty thousand peeces, whereof there came to the King for his fift, sixe thousand peeces a day.

Genebrardus in Chronographia.

Every peeze worth 13 rialls and a fourth part.

There is yet another thing to be spoken of, to shew the riches of Potosi, that the account which hath been made was only of silver that was marked and customed. And it is well knowne in Peru that they have long vsed silver in these Realmes which they call currant, which was neither marked nor customed. And they holde it for certain which know these mines, that in these daies the greatest parte of silver drawne at Potosi was not customed, and this had course amongst the Indians, and much amongst the Spaniardes, as I have seene continued to my time; so, as it may appeare, the third part of the riches of Potosi, yea the one halfe, came not to light, neither was it customed. There is yet a more notable consideration, in that which Plinie saith they hadde digged a fifteene hundred pases in this mine of Bebelo, and that continually they found water, which is the greatest hinderaunce they have to drawe foorth theyr mettall. But in this of Potosi, although they have digged two hundred *estados* or heights of a man in deapth, yet did they never finde any water, which is the greatest happinesse of this mountaine. But the mines of Porco, whose mettall is good and very rich, are at this day left for the discommoditie of water, which they have found in their worke; for they are two insupportable labours in searching of the mettall; first to digge and breake the rockes, and then to drawe out the water all together. The first of them, that is, to cut through the rockes, is paine enough; yea, very hard and excessive. Finally, at this day the King receives for his fift yeerely, from the mines of Potosi, a million of silver, besides the wealth that growes by quicksilver and other royall prerogatives, which is a great treasure. Some men of iudgement having cast vp the accomptes, say that what hath beene brought into the custome house of Potosi vnto the yeere of our Lord one thousand five hundred eighty and five, amounteth vnto a hundred thousand millions of peeces of essay, whereof every Peece is

Lib. iv.

woorth thirteene rialls and a fourthe parte, not reckoning the silver which hath bin caried away without custome, or that hath beene entred in other royall custome houses, or the silver that hath beene wrought in the country, which is not entred, the which is innumerable, although the first Registers of Entries are not so exactly kept as at this day; for, that in the beginning and first discoveries, they made their receit by Romans, so great was their aboundance.

But by the instructions and remembrances of Don Francisco de Toledo, the Viceroy, in the yeare of our Saviour Christ one thousand five hundred seaventy and foure, they find seventy and sixe millions to that yeere: and from that yeare to eighty five inclusive, it appeares by the royall registers, there were thirty five millions more entred. They sent this accompt to the Viceroy from Potosi, in the yeere I have mentioned, being then in Peru; and since, the wealth that hath come from Peru by ship hath amounted to much more. In that fleete where I came in the yeare one thousand five hundred eighty seaven, there were eleven millions transported in the two fleets of Peru and Mexico, whereof two thirds were in that of Peru, and almost the one halfe for the King. I thought good to set this downe particularly, to shew the power which his heavenly Maiestie hath given to the Kings of Spaine, heaping so many Crowns and Kingdomes vpon them, who (by the especiall favour of heaven) have ioyned the East with the West Indies, inviroining the whole worlde with their Power. [It may be thought that this provision has been made, through the providence of our God, for the good of these people, living at such a distance from their head, who is the Roman Pontiff and Vicar of Christ our Lord. Also for the defence of the same Catholic Faith and Roman Church in these parts where the truth is so opposed and persecuted by the heretics. For the Lord of Heaven, who gives and takes away the kingdoms at his will, has so ordered it. We ought,

therefore, humbly to pray that He will be pleased to favour the pious zeal of the Catholic King, giving him prosperous success and victory against the enemies of the holy faith. In this cause he spends the treasure of the Indies which have been given to him, and he even needs much more.[1]] The riches of Potosi justify this digression, and we will now turn to the mines, and show how they are worked, and how they refine the metal that is obtained from them.

CHAP. VIII.—*How they labour in the mines of Potosi.*

Boetius, complaining of the first inventer of mines, spake well: Boetius de consolat.

> "Heu primus quis fuit ille,
> Auri qui pondera tecti.
> Gemmasque, latere volentes,
> Preciosa pericula fodit?
>
> "Alas, who was the first,
> So curious and accurst,
> Who digged out of the mine,
> Mans mind to vndermine,
> Heavie weights of golde ore,
> Better concealde before:
> And pearlt crept into ground,
> Pale for feare to be found:
> Galing gold, wringing rings,
> Precious, but perilous things."

With reason he calleth them precious dangers, for the great labour and perill wherewith they draw out these mettalls, which men so much esteeme. Plinie saies, that in Italie there are many mines, but the Ancients would not suffer their people to worke in them, only to preserve the people. They brought these mettalls from Spaine, and made the Spaniards labour in the mines as tributaries. The Pli., lib. xxxiii, ca. 4.

[1] This passage is omitted in the old translation.

Lib. iv.

like doth Spaine now with the Indies, for there remaining many mines of mettall yet in Spaine, they will not seeke them, nor suffer any to worke in them, by reason of the inconveniencies which happen daily, but they bring them from the Indies, where they digge it with much labour and perill. This rocke of Potosi containes, as I have said, foure principall veines; that is, *La Rica*, that of Centeno, that of *Estaño*, and that of Mendieta. All these veines are of the East part of the mountaine, as looking to the Sunne rising, for on the West part there is not any. The foresaid veines runne from North to South, which is from Pole to Pole. In the largest place they have six foote, and in the narrowest a spanne bredth. There are others of divers fashions, that runne out of the said veines, like as out of the great armes of trees there commonly sprowt foorth lesse. Everie veine hath divers mines which are partes and portions of the same, distinct and divided betwixt divers masters by whose names they are commonly called. The great mine containes foure-score yardes, neither may it be more by the law, and the least containes foure. All these mines are at this day very deepe. In *La Rica* they reckon 78 mines which are 80 yards deep, or a hundred stades or height of a man, and in some places two hundred. In the veine of Centeno are 24 mines, whereof some are 70 or 80 stades deepe, and so of the other veines of this mountaine. For a remedie to this great profunditie they have invented mines which they call *socabones*,[1] which are caves or ventes made at the foote of the mountaine, the which go crossing til they incounter with the veines; for wee must vnderstand that although the veines runne North to South as hath been said, yet is it in declining from the toppe to the foote of the mountaine, which may be as they beleeve by coniecture above twelve hundred stades. And by this account, although the mines

[1] *Adits*, or horizontal cuttings.

extend in such a profunditie, yet there remaines six times as much space unto the bottome or roote, the which they say are most rich and aboundant, as the body and spring of all veines. Although unto this day we have seene the contrary by experience, for the higher the veine is to the superficies of the earth, the more rich they find it; and the deeper it goes the poorer it is, and of the baser aloy. They then invented the *socabones*, by which they enter to worke in the mines very easily, with lesse charge, paine, and danger. They have eight foote in breadth, and an *estado* in height, the which they shut with doores. By them they drawe forth their mettall very easily, paying to the proprietary of the *socabon* the fift part of all the metall they draw forth. There are nine already made and others are begunne. They were twenty and nine yeeres in making of one *socabon*, called *Venino*, which comes from the *Rica* veine. It was begunne in the yeere 1556, the eleventh yeere of the discovery, and was ended in the yeere 1585, the eleventh of August. This *socabon* reached the *Rica* veine thirtie five *estados* from the roote or spring, and from thence where it met to the mouth of the mine, were a hundred thirty five *estados*. So they must descend all this depth to labour in the mine. This *socabon* containes from his mouth vnto the veine of Crusero as they call it, 250 yardes, in which worke were spente twentie nine yeeres, whereby wee may see what great paines men take to draw silver out of the bowells of the earth. They labour in these mines in continuall darknes and obscuritie, without knowledge of day or night. And forasmuch as those places are never visited with the Sunne, there is not onely a continual darkness, but also an extreme colde, with so grosse an aire contrary to the disposition of man, so as such as newly enter are sicke as they at sea. The which happened to me in one of these mines, where I felt a paine at the heart, and beating of the stomach. Those that labour

therein vse candles to light them, dividing their work in such sort, as they that worke in the day rest by the night, and so they change. The mettall is commonly hard, and therefore they breake it with hammers, splitting and hewing it by force as if they were flintes. After, they carry vp this mettall upon their shoulders, by ladders of three branches made of neates lether twisted like peeces of wood, which are crossed with staves of wood, so as by every one of these ladders they mount and discend together. They are ten *estados* long a peece, and at the end of one, beginnes another of the same length, every ladder beginning and ending at platformes of wood, where there are seates to rest them like unto galleries, for that there are many of these ladders to mount by one at the end of another. A man carries ordinarily the weight of two *arrobas*[1] of mettall vpon his shoulders, tied together in a cloth in maner of a skippe, and so mount they three and three. He that goes before carries a candle tied to his thumb, for, as it is said, they have no light from heaven, and so go they vp the ladder holding it with both their handes; to mount so great a height which commonly is above a hundred and fiftie *estados*, a fearful thing and which breeds an amazement to thinke vpon it, so great is the desire of silver, that for the gaine thereof men indure any paines. And truly it is not without reason, that Plinie, treating of this subject, exclaimes and saies thus:—"We enter even into the bowells of the earth, and go hunting after riches, even to the place of the damned." And after, in the same book, he saieth, "Those that seeke for mettalls performe workes more then giants, making holes and caves in the depth of the earth, piercing mountaines so deepe by the light of candles, whereas the day and the night are alike, and in many moneths they see no day. So as often the walles of their mines fal, smothering many of them that labour therein." And afterwards he addes, "They pierce the

Plin. in procem., lib. xxxiii, cap. 4.

[1] 50 lbs.

hard rocke with hammers of yron, waying 150 poundes, and draw out the mettall upon their shoulders, labouring day and night, one delivering his charge to another, and all in darkness, onely the last sees the light; with wedges and hammers they breake the flintes, how hard and strong soever, for the hunger of gold is yet more sharpe and strong." This Plinie saies, who although he speakes as a historigrapher of that age, yet doth he seeme to prophecie of this time. Neither is it lesse which Phocion of Agatarchides reports of the great travail they indure, whom they called Chrysios, in drawing out of golde: for as the said Author saieth, gold and silver are as painefull to digge and drawe forth, as they are pleasing to possesse.

Chap. ix.—*How they refine the Mettall of Silver.*

The Vein, as I have said, where they finde silver, runnes betwixt two rockes, which they call La Caxa, whereof the one is commonly as hard as flint, and the other soft and more easie to breake. This mettall is not always equal, and of the same value, for you shall finde in one and the same veine, one sort of mettall very rich, which they call *Cacilla*, or *Tacana*, from which they draw much silver, and another is poore, from whence they draw little. The most rich mettall of this mountaine is of the colour of amber, and the next is that which inclines to blacke. There is other somewhat red, and other of the colour of ashes; finally of divers and sundrie coloures, which seeme to such as know them not, to be stones of no value. But the miners do presently know his qualitie and perfection, by certaine signes and small veines which they finde in them. They carry all this mettall they drawe out of these mines vpon Indian sheepe,[1] which serve them as asses to carry it to the milles. The richest mettall is refined by melting

[1] Llamas.

in those small furnaces which they call *Huayras*, for that is most leadie, by reason whereof, it is most subject to melt, and for the better melting thereof, th' Indians cast in a matter they call *Soroche*, which is a mettal ful of lead. The mettal being in these furnases, the filth and earthie drosse, through the force of the fire, remaines in the bottome, and the silver and lead melt; so as the silver swimmes vpon the lead, untill it be purified; then after they refine the silver many times. After this maner of melting they have vsually drawne out of one quintall of mettall, thirtie, fortie, and fiftie peeces of silver, and yet I have seene some most excellent, that have bin shewne me, where they have drawne in the melting two hundred, yea, two hundred and fiftie peeces of silver of a quintall of mettal, a rare wealth, and almost incredible, if we had not seen the tryall thereof by fire, but such mettalls are verie rare. The poorest mettall is that which yeeldes two, three, five, or six peeces or little more. This mettall hath commonly little lead, but is drie, and therefore they cannot refine it with fire. And for this reason, in Potosi there was great store of these poore mettalls, whereof they made no great account, but were reiected like straw, and as the skumme of the good mettall, vntill they found meanes to refine it by quicke-silver, whereby the skumme as they called it was of great profit, for the quicke-silver by a strange and wonderfull propertie purifies the silver, and is apt for these mettalls which are drie and poore, wherein they consume less quicke-silver then in the richer: for the richer they are the more neede of quicke-silver they have. At this day the most vsuall maner of refining in Potosi is by quicke-silver, as also in the mines of Zacatecas, and others of New Spaine. There were in old time, vpon the sides and toppes of Potosi, above six thousand *Huayras*, which are small furnaces where they melt their mettall, the which were placed like lightes (a pleasant sight to behold

by night) casting a light a farre off like a flame of fire. But at this day there are not above two thousand, for that (as I have said) they vse little melting, but refine it by quick-silver, the which is the greatest profit. And for that the properties of quicke-silver are admirable; and that this maner of refining of silver is remarkable, I will discourse of quicke-silver, of the mines and worke, and what is requisite for that subiect.

CHAP. X.—*Of the wonderfull properties of Quicke-silver.*

Qvickesilver, so called by the Latines, for that it runnes and slides suddenly from place to place, amongst all other mettalls hath great and wonderfull vertues. The first is, although it be a true mettall, yet is it not hard, neither hath it any certaine forme nor subsistence like to other mettalls, but is liquide, not like vnto golde and silver molten, but of his owne proper nature; and although it be a liquor, yet is it more heavie then any other mettall: and therefore all others swim above and sinke not to the bottome, being more light. I have seene two poundes of yron put into a barrell of quicke-silver, the which did swimme about like vnto wood or cork vpon the water. Plinie gives an exception heerevnto, saying that gold alone doth sinke and not swimme above it. I have not seene the experience; but it may be this growes, by reason that quicke-silver by nature doth inviron gold, and covers it, which is one of the most important properties it hath; for it ioynes with gold in a strange maner, it seekes it where it lies, and invirons it in such sort, as it doth distinguish and separate it from any other body or mettall wherewith it is mixt: for this reason such take gold as will preserve themselves from the dangers and discommodities of quicke-silver. They had vsed a remedie to those (in whose eares they have put quicke-

Plin., lib. xxxiii, ca. 6.

Lib. iv.

silver, to cause them to die secretly) to put little plates of gold into their eares (for that gold hath the vertue to draw out Mercurie) and after they drew out these plates all white with the quicke-silver, it did sticke vnto them. Being one day at Madrid, I went to see the exquisite workes which Iacomo de Treço (a rare worke-man of Milan) made for San Lorenzo el Real; it was my hap to be there one day whenas they gilded certaine peeces of a countertable of brasse, which is done with quicke-silver; and for that the fume of Mercurie is mortall, he tolde me that the worke-men preserved themselves from this venome, by swallowing a double duckat of gold roled vp; the which being in the stomacke, drawes vnto it all the quicke-silver that enters in fume by the eares, eyes, nostrilles, and mouth, and by this meanes freed themselves from the danger of quicke-silver, which the gold gathered in the stomacke, and after cast out by the excrements: a thing truly worthy of admiration. After the quicke-silver hath purified and purged gold from all other mettalls and mixtures, he is likewise separated from the golde his friend by the heate of the fire, the which purifies it from all quicke-silver. Plinie saies, that by a certaine art and invention they did seperate gold from quick-silver. It seemes to me the Ancients had no knowledge to refine silver by quicke-silver, which at this day is the greatest vse, and chiefe profite of quickesilver; for that he saies plainely, that quickesilver ioynes with no other mettall but with gold; and when he makes mention of refining of silver, he speakes onely but of the manner of melting; whereby wee may inferre that the Ancients had no knowledge of this secret. In truth, though there be a league and simpathie betwixt golde and quicke-silver, yet whereas the mercurie findes no golde, it ioynes with silver, though not in the like maner as with gold; but in the end, it doth clense and purge it from earth, copper, and lead, amongst the which the silver growes,

Plin., lib. xxxiii, c. 6.

without any neede of fire to melt it: yet must they vse fire to separate it from the silver, as I will shew hereafter. Quicksilver holds no account of other mettalls, but of golde and silver; but contrariwise it doth corrupt them, force and consume them, and flieth from them as much as may be. The which is likewise admirable, and for this cause they put it in earthen vessells, or in beasts skinnes. For if it be put in vessells of copper, of yron, or other mettall, it presently pierceth and corrupts them. And therefore Plinie calleth it the poyson of all things, for that it consumes and spoyles all. We finde quicke-silver in the graves of dead men, which after it hath consumed the bodies, comes foorth pure and whole. There hath beene likewise found in the bones and marrow of men and beasts, who having received it in fume by the mouth and nostrills, congeales within them and pierceth even vnto the bones. Therefore it is a dangerous thing to frequent so perillous and mortall a creature. It hath an other propertie, which is, to runne and make a hundred thousand small droppes, whereof not one is lost, be they never so little, but they returne every way to their liquor. It is almost incorruptible, having nothing in a maner that may consume it. And therefore Plinie calls it the eternall sweate. It hath yet another propertie, that although it dooth separate gold from copper, and all other mettalls, yet they that will guilde copper, brasse, or silver, use quicke-silver as the meanes of this vnion; for with the helpe thereof they guilde mettalls. Amongest all the woonders of this strange liquor that seemes to me most woorthy observation, that although it be the weightiest thing in the worlde, yet is it converted into the lightest of the worlde, which is smoake, and sodainely the same smoake which is so light a thing turnes againe into so heavy a substance, as is the proper liquor of quicke-silver, whereinto it is dissolved; for this smoake incountering the mettall on high, being a solide bodie, or comming into a colde region,

Lib. iv.

sodainely it thickens and is converted into quickesilver, and if you set him once againe to the fire, hee dooth likewise returne into smoake, to be resolved again into quicke-silver. A strange transmutation of so heavy a substance into so light a thing; and of so light into so heavy, the which we may hold for a rare thing in Nature. And therefore the Author of Nature is iustly to be glorified in these and all other strange properties of this mettall, seeing that all things created doe properly obey their secret and vnknowne lawes.

Chap. xi.—*Of the place where they finde quicke-silver, and how they discovered these rich mines in Huancavilca.*

Quicke-silver is found in a kinde of stone, which dooth likewise yeelde vermillion, which the Antients called *Minium*, and at this day they call the images of cristall miniades, which are painted with quick-silver. The Antients made great accompt of this *Minium* or vermillion, holding it for a sacred colour, as Plinie reportes, saying, that the Romans were accustomed to paint the face of Iupiter, and the bodies of those that triumphed in Ethiopia: yea their idolles and their Governors likewise had their faces coloured with this *Minium*. And this vermillion was so esteemed at Rome (which they brought onely from Spaine, where they had many pittes and mines of quickesilver, which continue there to this day) that the Romans suffered it not to be refined in Spaine, lest they should steale some of it, but they carried it to Rome, sealed vp in a masse as they drew it out of the mine, and after refined it. They did yeerely bring from Spaine, especially from Andalusia, about tenne thousand poundweight, which the Romans valued as an infinite treasure. I have reported all this out of that Author, to the end that those which do see what passeth at this day in Peru, may have the content to know

what chanced in former ages among the mightiest Lords of the world. I speak for the Yncas kings of Peru, and for the naturall Indians thereof, which have laboured and digged long in these mines of quicke-silver, not knowing what quicke-silver was, seeking onely for Cinabrium or vermillion, which they call Llimpi,[1] the which they esteeme much, for that same effect that Plinie reportes of the Romans and Ethiopians, that is, to paint the face and bodies of themselves and their idolls: the like hath been much practised by the Indians, especially when they went to the warres, and they vse it at this day in their feasts and dauncing, which they call slubbering,[2] supposing that their faces and visages so slubbered[3] did much terrifie, and at this day they holde it for an ornament and beautifying; for this cause there were strange workes of mines in the mountaines of Huancavilca, which are in Peru, neere to the cittie of Guamanga, out of the which they drew this mettall. It is of such a manner, that if at this day they enter by the caves or *soccabones*, which the Indians made in those dayes, they loose themselves, finding no passage out: but they regarded not quicke-silver, which naturally is in the same substance or mettall of vermillion, neither hadde they knowledge of any such matter.

The Indians were not alone for so long a time without the knowledge of this treasure, but likewise the Spaniards, who until the yeare of the incarnation of our Saviour, one thousand five hundred three score and six, and threescore and seaven, at such time as the licentiate Castro governed in Peru, discovered not the mines of quicke-silver, which happened in this manner. A man of iudgment called Henrique Garces, a Portugall borne, having a peece of this coloured mettall, as I have said, which the Indians call Llimpi, with which they paint their faces, as hee beheld

[1] *Llimpi* is the Quichua for mercury, and *Ychma* for vermillion.

[2] *Embixarse.* [3] *Embixados.* Painted with red lead.

Lib. iv.

it well, found it to be the same which they call Vermillion in Castille; and for that hee knew well that vermillion was drawne ont of the same mettall that quickesilver was, he coniectured these mines to be of quickesilver, and went to the place whence they drew this mettall to make triall thereof. The which hee found true, and in this sorte the mines of Palcas in the territorie of Guamanga being discovered, great numbers of men went thither to drawe out quicke-silver, and so to carry it to Mexico, where they refine silver by the meanes of quickesilver, wherewith many are inriched. This country of mines which they call Huancavilca was then peopled with Spaniards and Indians that came thither, and come still to worke in these mines of quicke-silver, which are in great numbers and very plentifull; but of all these mines, that which they call *Amador de Cabrera*, or *Los Santos*, is goodly and notable. It is a rocke of most hard stone, interlaced all with quickesilver, and of that great-ness that it extends above four score *varas* or yardes in length, and forty in breadth; in which mine they have many pittes and ditches, of three score and tenne *estados* deepe, so as three hundred men may well worke together, such is the capacity thereof. This mine was discovered by an Indian of Amador de Cabrera, called Nauincopa, of the village of Acoria, the which Amador de Cabrera caused to be registered in his name. He was in suit against the the Fiscal, but the vsufruite was adiudged to him by sentence as the discoverer. Since, he solde his interest to another, for two hundred and fifty thousand ducates; and afterwards thinking he had bin deceived in the sale, he commenced an action against the buyer, being worth, as they say, above five hundred thousand ducats; yea, some holde it to be worth a million of golde, a rare thing to see a mine of that wealth.

Whenas Don Francisco of Toledo governed in Peru, there was one which had bin in Mexico, and observed how

they refined silver with mercury, called Pedro Fernandes de Velasco, who offred to refine silver at Potosi with mercury; and having made triall thereof in the yeare of our redemption, one thousand five hundred seaventy and one, perfourmed it with credite; then beganne they to refine silver at Potosi with quicksilver, which they transported from Huancavilca, which was a goodly helpe for the mines; for by the meanes of quickesilver they drew an infinite quantity of mettall from these mines, whereof before they made no accompt, the which they called scrapings. For as it hath beene said, the quickesilver purifies the silver, although it be drie, poore, and of base alloy, which can not be doone by melting in the fire. The Catholike King drawes from his quickesilver mines, without any charge or hazard, almost foure hundred thousand peeces, the which are fourteene rialls a peece, or little less, besides the rights that rise in Potosi, where it is employed, the which is a great riches. They doe yearely, one with another, drawe from these mines of Huancavilca eight thousand quintalls of quickesilver, yea and more.

Chap. xii.—*The manner how to drawe out Quicke-silver and how they refine Silver.*

Let vs now speake how they drawe out Quicke-silver, and how they refine silver therewith. They take the stone or mettall where they find the quicke-silver, the which they put into the fire in pots of earth well luted, being well beaten, so as this mettall or stone comming to melt by the heate of the fire, the quicke-silver separates it selfe, and goes forth in exhalation, and sometimes even with the smoake of the fire, vntil it encounters some body where it staies and congeales, and if it passe vp higher, without meeting of any hard substance, it mountes vp vntill it be

Lib. iv.

colde, and then, congeled, it falles downe again. When the melting is finished, they vnstoppe the pottes and draw forth the mettal, sometimes staying vntil it be very cold, for if there remained any fume or vapor, which should incounter them that vnstopt the pottes, they were in danger of death, or to be benummed of their limbes, or at the least to loose their teeth. And for that they spend an infinite quantitie of wood in the melting of these mettals, a miller called Rodrigo de Torres, found out a profitable invention, which was to gather certaine straw which growes throughout all those mountaines of Peru, the which they call *ychu*,[1] it is like unto a hard reede wherewith they make their fire. It is a strange thing to see the force which this straw hath to melt and dissolve these mettalls, the which falls out, as Plinie saies, that there is gold which melts more easily with the flame of straw then with hote burning coales. They put the quicke-silver thus molten into skinnes, for that it keepes best in leather, and in this sort they lay it into the Kings store house, from whence they carry it by sea to Arica, and so to Potosi by land vpon their sheepe. There is yeerely spent in Potosi for the refining of mettalles, about six or seven thousand quintalles of quicke-silver, besides that they draw from the plates, which is the earth or drosse of the first washings of these mettalls, which are made in caldrons. The which plates they burne in their furnaces to draw out the quicke-silver which remaines in them, and there are above fiftie of these furnaces in the Citie of Potosi, and in Tarapaya. The quantitie of mettalls which they refine, as some men of experience have made the account, doth amount yeerely to above three hundred thousand quintalles; from the earth and drosse whereof being molt and refined, they may draw yeerely above two thousand quintalles of quicke-silver.

Plin., lib. xxxiii, c. 1.

[1] *Ychu* (Stipa Ychu of *Kunth*) is the coarse grass of the Peruvian Cordilleras.

We must understand there are divers sortes of mettalls, for some yeelde much silver, and waste little quicke-silver; others consume much quicke-silver, and yielde little silver; and there are others which consume much quicke-silver and yeelde much silver; and others that consume little quicke-silver, and also yeelde little silver; and as men incounter in these mettalles, so they grow rich or poore in their trafficke. Although commonly the rich mettall yeelds much silver, and consumes much quicke-silver; and likewise that which is poore, yeeldes little silver, and consumes as little mercurie. They first beat and grind the mettall very small, with the hammers of the machinery, which beat this stone like vnto tanne milles, and being well beaten they searce it in a copper searce, making the pouder as small and fine as if it were horse haire; these searces being well fitted, doe sift thirtie quintalles in a day and a night; then they put the pouder of the mettall into the vessels vpon furnaces, whereas they anoint it and mortifie it with brine, putting to everie fiftie quintalles of pouder, five quintalls of salt. And this they do for that the salt seperates the earth and filth, to the end the quicke-silver may the more easily draw the silver vnto it. After, they put quicke-silver into a peece of holland and presse it out vpon the mettall, which goes forth like a dewe, alwaies turning and stirring the mettall, to the end it may be well incorporate. Before the invention of these furnaces of fire, they did often mingle their mettall with quicke-silver in great troughes, letting it settle some daies, and did then mix it and stirre it againe, vntil they thought all the quicke-silver were well incorporate with the silver, the which continued twentie daies and more, and at the leest nine daies. Since they discovered, as the desire to get is diligent, that to shorten the time fire did much helpe, to incorporate silver the sooner with quicke-silver, they invented these furnaces, whereon they set vessels to put in their mettall with salt

Lib. iv.

and quicke-silver, and vnderneath they put fire by little and little in furnaces made for the nonce vnderneath; so as in five or six daies the quicke-silver is incorporate with the silver. And when they finde that the mercurie hath done his part, and assembled all the silver, leaving nothing behinde, but is well imbrued, as a sponge doth water, dividing it from the earth, lead and copper, with the which it is engendered. Then after they separate it likewise from the quicke-silver, the which they do in this sort; they put the mettall in caldrons, and vessels full of water, where with certaine wheeles they turn the mettall round about, as if they should make mustard, and so the earth and drosse goes from the mettall with the water that runs away. The silver and quicke-silver as most ponderous remaining in the botome, the mettall which remaines is like unto sand, then they take it out and wash it againe in great platters of wood, or keelers full of water, still drawing the earth from it, vntil they leave the silver and quicke-silver well clensed. There slippes away also some small portion of silver and quicke-silver with the earth and dross, which they call washings, the which they after wash againe and draw out the remainder. When the silver and quicke-silver are clensed and beginne to shine, and that there remaines no earth, they put all the mettall into a cloth, which they straine out very forcibly, so as all the quicke-silver passeth out, being not incorporate with the silver, and the rest remaines as a loafe of silver, like to a marke of almonds pressed to draw oyle. And being thus pressed the remainder containes but the sixt part in silver, and five in mercurie. So as if there remaines a marke of threescore pounds, ten are of silver, and fiftie of mercurie. Of these markes they make *piñas*, as they call them, like pine apples or sugar loaves, hollow within, the which they commonly make of a hundred pound weight; then to separate the silver from the quicke-silver, they put it

into a violent fire, which they cover with an earthen vessel, like to the mold of a sugar loafe, or vnto a capuchon or hoode, the which they cover with coales, and set fire vnto it; whereby the quicke-silver exhales in smoake, the which striking against the capuchon of earth, it thickens and distills, like vnto the smoake of a potte covered; and by a pipe, like vnto a limbecke, they receive the quicke-silver which distils, the silver remaining without changing the forme, but in weight it is diminished five partes of that it was, and is spungious, the which is worthy the observation. Of two of these loaves they make one barre of silver, in weight 65 or 66 markes; and in this sorte they carry it to the touch, custome, and marke. Silver drawne with mercurie is so fine, that it never abates of two thousand three hundred and fourescore of alloy, and it is so excellent, that the worke men are inforced to allay it, putting some mixture to it, as they do likewise in their mints, whereas their mony is stampt. Silver indures all these martiredomes, if we may so call it, to be refined, the which if we consider well, it is a bodie framed where they grinde, sift, kneade, lay the leven, and bake the silver; besides all this they wash it and wash it againe, they bake it and bake it againe, induring the pestells, sives, troughes, furnaces, caldrons, presses, and finally by the water and fire. I speake this, for that seeing this art in Potosi, I did consider what the Scripture speakes of the iust, *Colabit eos et purgabit quasi argentum.* And that which they speake in another part, *Sicut argentum purgatum septuplum.* So as to purifie silver, to refine and clense it from the earth and stone where it ingenders, they purge and purifie it seven times; for in effect it passeth their handes seven times, yea oftener, vntill it remaines pure and fine; so is it in the word of God, where the soules must be so purified that shall injoy the heavenly perfection.

Mat. iii.

Eccles. ii.

Psal. xi.

Chap. xiii.—*Of their Engines to grinde the mettall, and of their triall of Silver.*

Lib. iv.

To conclude this subject of silver and of mettalls, there remaines yet two things to speake of, the one is of their engins and milles, the other of their essay or triall: I have said before how they grinde their mettal, for the receiving of the quicksilver, which is done with diverse instruments and engins, some with horses like vnto hand-milles, others like water-milles; of which two sortes there are great numbers. But for that the water they doe vse commonly is but of raine, whereof they have not sufficient but three months in the yeare, December, Ianuary, and February: for this reason they have made Lakes and standing Pooles, which containe in circuite about a thousand and six hundred roddes, and in deapth three *estados;* there are seven with their sluces: so as when they have neede of any water they raise vp a sluce, from whence runnes a little streame of water, the which they stoppe vppon holy-dayes. And when the Lakes and Pooles doe fill, and that the yeare abounds with raine, their grinding dooth then continue fixe or seaven moneths; so as even for silvers sake men desire a good yeere of raine in Potosi, as they doe in other places for bread. There are some other engins in Tarapaya, which is a valley three or foure leagues distant from Potosi, whereas there runnes a river as in other parts. The difference of these engins is, that some goe with sixe pestels, some with twelve, and others with fourteene. They grinde and beate the mettal in morters, labouring day and night; and from thence they carry it to be sifted vpon the bankes of the brooke of Potosi. There are forty eight water-mills, of eight, ten, and twelve pestells, and foure on the other side, which they call Tanacu-ñuñu; in the Cittie of Tarapaya, there are two and twenty engins all vpon the water;

besides, there are thirty goe with horses in Potosi, and many others in divers partes, so great the desire of man is to get silver, which is tryed by deputies appoynted by the King.

To give the alloy to every peece, they cary the bars of silver vnto the Assay maister, who gives to every one his number, for that they carry many at once, he cuttes a small peece of every one, the which he weighs iustly, and puttes them into a cruset, which is a small vessell made of burnt bones beaten; after, hee placeth everie crusible in his order in the furnace, giving them a violent fire, then the mettall melteth, and that which is lead goes into smoake, and the copper and tinne dissolves, the silver remayning most fine, of the colour of fire. It is a strange thing, that being thus refined, although it be liquid and molten, yet it never spilles, were the mouth of the crusible turned downewardes; but it remayneth fixed, without the losse of a droppe. The Assay maister knoweth by the colour and other signes, when it is refined, then dooth he draw the crusibles from the fire, and weighs every peece curiously, observing what every one wants of his weight; for that which is of high alloy, wastes but little, and that which is baser diminisheth much; and according to the waste he sees what alloy he beares, according to the which he markes every barre punctually. Their ballaunce and weights are so delicate, and their graines so small, as they cannot take them vppe with the hand, but with a small paire of pincers: and this triall they make by candle light, that no ayre might moove the ballance. For of this little the price of the whole barre dependeth. In trueth it is a very delicate thing, and requires a great dexteritie, which the holy Scripture vseth in many places, to show how God prooves his chosen: and to note the differences of the merites of soules, whereas God gives the title of an Assay-maister to the prophet Ieremie, that hee may trie and declare the spirituall vertue of men, and

Psal. lxv. Prover. xvii, 27.

Lib. iv. of his workes, which is the proper worke of the Spirite of God, being he that weighs the Soules of men. We will rest content with what we have spoken touching silver, mettalls, and mines, and will passe to the two other mixtures, the which are plants and beasts.

Ierem. vi.
Prover. xvi.

Chap. xiv.—*Of Emeraldes.*

It shall not be from the purpose to speake somthing of emeraldes, both for that it is a pretious thing, as golde and silver, as also for that they take their beginning from mines and mettalls, as Plinie reportes. The emerald hath bin in old time in great esteeme, as the same Author writes, giving it the third place amongst all iewelles and pretious stones, that is, next to the diamond and pearle. At this day they do not so much esteeme the emerald, nor the pearle, for the great aboundance is brought of these two sorts from the Indies, onely the diamond holds the principality, the which can not be taken from it. Next, the rubies come in price and other stones, which they hold more pretious than the emerald. Men are so desirous of singularities and rare things, that what they see to be common, they do not esteeme. They report of a Spaniard, who being in Italie when the Indies were first discovered, shewed an emerald to a Lapidary, who, asking him the value thereof, after he had well viewed it, being of an excellent lustre and forme, he prized it at a hundred ducats; he then shewed him an other greater than it, which he valued at three hundred ducats. The Spaniard, drunke with this discourse, carried him to his lodging, shewing him a casket full. The Italian, seeing so great a number of emeralds, sayde vnto him, Sir, these are well worth a crowne a peece. The like hath happened both at the Indies

Plin., lib. xxxvii, ca. 5.

and in Spaine, where the stones have lost their estimation, for the great abundance they finde of them there.

Pliny reportes many excellencies of the emerald, amongst the which he saith, that there is nothing more pleasing, nor more healthful for the sight; wherein he hath reason, but his authority importeth little, seeing there is such store. It is reported that Lolia, a Romane Dame, bestowed vppon a scoffion[1] and a garment embroidered with pearle and emerald 400,000 ducats, the which at this day might be doone with lesse than forty thousand ducats, yea two such. They have been found in diverse partes of the Indies. The Kings of Mexico didde much esteeme them; some did vse to pierce their nosthrils, and hang therein an excellent emerald; and they hung them on the visages of their idolles. The greatest store is found in the New Kingdome of Grenada and in Peru, neere vnto Manta and Puerto Viejo. There is towardes that place a soile which they call the Land of Emeraldas, for the knowledge they have of aboundance to be there; and yet vnto this day they have not conquered that land. The emeralds grow in stones like vnto cristall; I have seene them in the same stone, fashioned like a veine, and they seeme by little and little to thicken and refine. I have seene some that were halfe white and halfe greene; others all white, and some greene and very perfite. I have seene some of the bignesse of a nut, and there have bin some greater found; but I have not knowen that in our time they have found any of the form and bignesse of the *catino* or iewel they have at Genoa, the which they esteeme (and with reason) as a iewell and not as a relique; yet without comparison, the emerald which Theophrastus speakes of, which the King of Babilon presented to the King of Egypt, surpasseth that of Genoa; it was foure cubites long and three broade; and they say, that in Iupiters Temple there was a needle or pyramide, made of foure

Plin., lib. xxxvii, cap. 5.

Plin., lib. ix, c. 35.

[1] Tocado.

Lib. iv. emeralds stones of forty cubits long, and in some places foure broade, and in others two; and that in his time there was in the temple of Hercules at Tyre, a pillar of emerald. It may be, as Plinie saieth, it was of some greene stone, somewhat like to the emerald, and they called it a false emerald. As some will say, that in the Cathedrall Church of Cordova there are certaine pillars of emeraldes which remaine since it was a mosque for the Kings Miramamolins Moores,[1] which raigned there. In the fleete, the yeare one thousand five hundred eighty and seven, in the which I came from the Indies, they brought two chests of emeralds, every one weighing at the least foure *arrobas*, whereby wee may see the aboundaunce they have. The holy Scripture commends these emeralds as pretious iewels, they number them amongest the pretious stones which the hie Priest carried on his Ephod or breast-plate, as those which did beautifie the walles of the heaveuly Ierusalem.

Exod. xxix, xxxix.

Apoc. xxi.

Chap. xv.—*Of Pearles.*

Now that we intreat of the great riches that comes from the Indies, it were no reason to forgette the pearle, which the Ancients called Margaritas, and at the first were in so great estimation, as none but royall persons were suffered to weare them; but at this day there is such aboundance as that the negresses themselves do weare chaines thereof; they growe in oyster shells, in eating whereof I have found pearles in the middest of them. These oisters within are of the colour of heaven, very lively, and in some places they make spoones of them, the which they call of mother of pearle. The pearles do differ much in forme, in bignes, figure, colour, and polishing; so likewise in their price they differ much. Some they call Ave Marias, being like the small graines of

[1] "Reyes Miramamolines Moros," meaning the Khalifas of Cordova.

beades; others are Pater Nosters, being bigger. Seldome shall you finde two of one greatnesse, forme, and colour. For this reason the Romans (as Pliny writeth) called them Unions. Whenas they doe finde two that are alike in all poyntes, they raise the price much, especially for ear-rings. I have seene some payres valued at thousands of ducats, although they were not like to Cleopatra's two pearles, whereof Pliny reportes either of them being woorth a hundred thousand ducats, with the which this foolish Queene wonne a wager she hadde made against Marc Anthony to spend in one supper above an hundred thousand ducats; so, at the last course, shee dissolved one of these pearles in strong vinegar, and dranke it vp. They say the other pearle was cutt in two, and placed in the Pantheon at Rome, at th'eares of the image of Venus. Of the other Clodius, the son of the tragedian Esop, relates that in a banquet he presented to every one of his guests (amongest other meates) a rich pearle dissolved in vineger, to make his feast the more royall and sumptuous.

Plin., lib. iii, c. 35.

These were the follies of those ages, and those at this day are nothing lesse, for that we see not onely hattes and bandes, but also buskins, and womens pantofles (yea, of base condition), imbrodred all over with pearle. They fish for pearles in diverse partes of the Indies, the greatest aboundaunce is in the South Seas, neere vnto Panama, where the Ilandes of pearles be, as they call them. But at this day they finde greatest store, and the best, in the North Sea, the which is neare to the Rio de la Hacha. I did see them make their fishing, the which is done with great charge and labor of the poore slaves, which dive sixe, nine, yea twelve fadomes into the sea, to seeke for oysters, the which commonly are fastened to the rockes and gravell in the sea. They pull them vp, and bring them above the water to their canoes, where they open them, drawing forth the treasure they have within them. The water of the sea in

this parte is verie colde, but yet the labor and toile is greatest in holding of their breath, sometimes a quarter, yea halfe an houre together, being vnder the water at their fishing. And to the end these poore slaves may the better continue and holde their breaths, they feede them with drie meates, and that in small quantitie, so as covetousnesse makes them abstaine and fast thus against their willes. They employ their pearles to diverse workes, and they pierce them to make chaines, whereof there is great store in every place. In the yeere of our Lord one thousand five hundred eighty one, I did see the note of what came from the Indies for the King; there were eighteen marcs of pearle, besides three caskets; and for private persons, there were twelve hundred threescore and foure marcs, and besides them, seaven caskets not pierced, which heeretofore we would have esteemed and holde for a lie.[1]

Chap. xvi.—*Of the Indian Bread, and of Mays.*

In our discourse of plants wee will beginne with those which are proper and peculiar to the Indies; and after with the rest that are common to the Indies and Europe; and forasmuch as plants were chiefly created for the nourishment of man, and that the chiefe (whereof he takes his nourishment) is bread, it shall be good to shew what bread the Indians vse, and whereon they live for want thereof. They have, as we have heere, a proper name, whereby they note and signifie bread, which at Peru they call *tanta*,[2] and in other places by another name. But the qualitie and substance of the bread the Indians vse differs much from ours: for we finde not they had any kinde of wheat or barly, nor any other kinde of graine which they vse in Europe to make

[1] "Que en otro tiempo se tuviera por fabuloso."

[2] *Ttanta* is the Quichua for bread.

bread withall: insteede whereof they vsed other kindes of graines and rootes, amongst the which Mays holds the first place, and with reason. In Castile they call it Indian wheat, and in Italie they call it Turkey graine. And even as wheat is the most common graine for the vse of man in the regions of the old world, which are Europe, Asia, Affrike, so, in the new found worlde, the most common graine is Mays, the which is found almost in all the kingdomes of the West Indies, as at Peru, New Spaine, in the new kingdome of Granada, in Gautimala, in Chile, and in the Tierra Firme. I do not finde that in old time, in the Ilands of Barlovente, as Cuba, Santo Domingo, Iamaica, and S. Juan,[1] that they vsed Mays. Now they vse more the Yuca and Casavi, whereof we will presently intreate. I do not thinke that this Mays is any thing inferiour to our wheat in strength nor substance, but it is more hote and grosse, and engenders more bloud, wherevpon they that have not bin accustomed therevnto, if they eat too much, they swell and become scabbed. It growes vpon canes or reedes; every one beares one or two *mazorcas*, to the which the graine is fastened, and although the graine be bigge, yet finde they great store thereof, so as in some *mazorcas* I have told seven hundred graines. They must plant it with the hand one by one, and not very thicke; it requires a hote and moist ground, and growes in great aboundance in many places of the Indies. It is not strange in those countries to gather 300 *Fanegas* or measures for one sowen. There is difference of Mays as there is of wheat, one is great and very nourishing, another small and drie, which they call *Moroche*.[2] The greene leaves and stalks of Mays is a good foode for their mules and horses, and it serves them for straw when it is dried; the graine is of more nourishment for horses then barley; and therefore, in those countries, they vse to water their horses before they eate, for if they

[1] Puerto Rico.

[2] *Muruchu* is "hard" in Quichua.

should drinke after, they would swell as when they eate wheat. Mays is the Indians bread, the which they commonly eate boiled in the graine hote, and they call it *Moti*,[1] as the Chinese and Japanese eate their rice sodden with the hote water. Sometimes they eate it baked. There is some Mays round and bigge, as that of Lucanas, which the Spaniards eate roasted as a delicate meat, and it hath a better taste then toasted beans. There is another kinde of eating it more pleasant, which is, to grinde the Mays, and to make small cakes of the flower, the which they put in the fire, and then bring them hote to the table. In some places they call them *Arepas*. They make also round bowles of this paste, and so trimme them that they continue long, eating it as a dainty dish.

The Indians also make a certaine kinde of paste of this flour mixt with sugar, a kind of biscuits which they call *melindres*. This Mays serves the Indians, not only for bread, but also for wine: for they do make their drinke thereof, wherewith they are sooner drunke than with wine of grapes. They make this wine of Mays in diverse sortes and maners, calling it in Peru Açua,[2] and by the most common name of the Indies Chicha. And the strongest is made like unto beere, steeping the graine vntill it begins to sprout. After, they boyle it in such sort, that it growes so strong, as a little overthrowes a man. In Peru they call this Sora.[3] Its use is forbidden by the Law, for the great inconveniences that grow thereby, making men drunke. But this Lawe is ill observed, for that they vse it still; yea they spend whole dayes and nights in carousing. Pliny reporteth that this maner of beverage of graine stieped, and after sodden, wherewith they were made drunke, was in old time vsed in Spaine, France, and other Provinces, as at this day in

Plin., lib. xiv, c. 22.

[1] *Mutti*, boiled maize.

[2] *Acca*—fermented liquor, in Quichua.

[3] *Sora* is not a Quichua word. See *G. de la Vega*, i, p. 277.

Flanders they vse ale made of malt. There is another maner of making this Açua or Chicha, which is to mash the mays, and make a leven thereof, and then boile it; yea the Indians holde opinion that, to make good leven, it must bee chewed by old withered women, which makes a man sicke to heare, and yet they doe drinke it. The cleanliest manner, the most wholesome, and that which least harmeth, is to roast the Mays, which the most civil Indians doe vse, and some Spaniardes, yea for physicke. For in effect they finde it a very wholesame drinke for the reines, so as you shall hardly finde any one at the Indies complaine of paine in the backe, for that they do drinke of this Chicha. The Spanyards and Indians eate this Mays boyled and roasted for daintinesse, when it is tender in the grape like milke; they putte it into the pot, and make sauces that are good to eate. The buds of Mays are very fatte, and serve insteede of butter and oyle: so as this Mays at the Indies serves both for men and beasts, for bread, wine, and oile. For this reason the Viceroy Don Francisco de Toledo saide, that Peru hadde two things rich, and of great norishment, which were Mays, and the cattell of the countrey. In truth, he had reason, for these two things did serve them as a thousand.

I will aske sooner than I can answer it, whence Mays was first carried to the Indies, and why they do call this profitable graine in Italie, Turkie graine? for in trueth I doe not finde that the Antients make any mention of this graine, though that millet (that Plinie writes to come from the Indies into Italie, tenne yeares before he didde write it) hath some resemblance vnto Mays, for that it is a graine, as he saies, that growes in reede, and covers it selfe with the leafe, and hath the toppe like haires, being very fertile; all which things agree not with millet. To conclude, God hath imparted to ev'ry region what is needefull. To this continent he hath given wheate, which is the chiefe nourish-

Lib. iv.

ment of man; and to the Indians he hath given Mays, which hath the second place to wheate, for the nourishment of men and beasts.

Chap. xvii.—*Of Yucas, Caçavi, Papas, Chuñus, and Rice.*

In some partes of the Indies they vse a kinde of bread they call Caçavi,[1] which is made of a certaine roote they call Yuca. This Yuca is a great and grosse roote, which they cutte in small morsells, they grate or scrape it, and then put it in a presse to straine, making a thinne and broade cake thereof, almost like vnto a Moores target or buckler; then doe they drie it, and this is the breade they eate. It hath no taste, but is healthfull and of good nourishment. For this reason we said, being at Santo Domingo, that it was the proper foode for great eaters, for that they might eate much, without any feare of surfletting. They must of necessitie water this Caçavi before they eate it: it is sharpe, and easely watered with water or broath, wherein it is very good, for that it swells much, and so they make capirotadas; but it is hardly stieped in milke, in honny of sugar cane, or in wine, for that these liquors cannot pierce it, as it doth bread made of wheate. Of this Caçavi there is one kind more delicate than any other, which is that they make of the flower called Xauxau, which they do much esteeme in those partes. For my parte, I esteeme more a morsell of bread, how hard and black soever. It is a strange thing that the iuice or water that cometh from this roote when they straine it, which makes the Caçavi, is a deadly poison, and killes any that drinkes thereof; but the substance that remaineth is a very wholesome bread and nourishment, as we have saide. There is another kinde of Yuca, which they call sweet, and hath not this poyson in the iuyce; this is eaten

[1] Cassava.

in the roote boyled or roasted, and is good meate. Caçavi will keepe long, and therefore they carry it to sea in steede of biscuit. The place where they vse most of this bread is at the Ilands of Barlovente, which are Saint Domingo, Cuba, Puerto Rico, Iamaica, and some others thereabouts; for that the soile of these Ilands will neither beare wheate, nor Mays, for whenas they sowe wheate, it comes vp well, and is presently greene, but so vnequally, as they cannot gather it; for of the seede sowen at one instant, some is spindled, some is in the eare, and some doth but bud, one is great and an other little, one is in the grasse and another in the graine; and although they have carried labourers thither, to see if there were any tillage or Art to be vsed, yet could they finde no remedy for the quality of the earth. They carry meale from New Spaine or the Canaries, which is so moist, that hardly can they make any profitable bread, or of good taste. The wafer cakes wherewith they say Masse, did bend like to wet paper, by reason of the extreame humiditie and heate which are ioyntley in that countrey. There is another extreame contrary to this, which hinders the growing of mais or wheate in some parts of the Indies, as on the height of the Sierra of Peru, and the provinces which they call the Collao, which is the greatest parte of this Realme, where the climate is so colde and drie, as it will not suffer any of these seedes to grow: in steede thereof the Indians vse an other kinde of roote, which they call Papas. These rootes are like to grownd nuttes, they are small rootes, which cast out many leaves. They gather this Papas, and dry it well in the Sunne, then beating it they make that which they call *Chuñu*, which keeps many daies, and serves for bread. In this realme there is great trafficke of *Chuñu*, the which they carry to the mines of Potosi; they likewise eat of these Papas boyled or roasted. There is one sweete kinde, which growes in hot places, whereof they do make certaine sauces and minced meates,

which they call *Locro*. To conclude, these rootes are the bread of that land; so as when the yeare is good, they reioyce much, for that oftentimes they freeze in the earth, so great is the cold of that region: they carry Mays from the valley or sea coast, and the Spaniardes which are dainty, carrie likewise from the same places wheate meale, whereof they doe make good breade, because that the land is drie.

In other partes of the Indies, as at the Phillippines, they vse Rice insteade of bread, whereof there growes very good, and in great aboundance in all that countrey, and in China, and it is of good nourishment, they seethe it in purcelaines, and after mix it hote with the water amongest other meates. In many places they do make their wine and drinke of this rice, steeping, and then after boyling it, as they do the beere in Flanders, or the Açua in Peru. Rice is a meate not much lesse common and generall throughout the world than wheate or mays, and perchaunce more; for besides that they vse it in China, Iappon, and the Phillippines, and in the greatest parte of the East Indies, it is a graine most common in Affrike and Ethiopia. It requires a wet ground, almost overflowne like to a medow. In Europe, Peru, and Mexico, where they have the vse of wheate, they eate rice as a meate, and not for bread; they seethe it with milke or with broth, or in some other sorte. The most exquisite rice commeth from the Phillippines and China, as hath beene sayde. And this may suffice to vnderstand what they eate generally at the Indies in steade of bread.

Chap. xviii.—*Of divers Rootes which growe at the Indies.*

Although in these partes the Land be more aboundant and fertile in frvites that growes vpon the earth, by reason

of the great diversitie of fruite trees and plantes we have; yet for rootes and other things that grow vnder the earth, the which they vse for meates, in my opinion there is greatest aboundance there: for of these kindes of plants, we have radishes, turnips, parsnips, carrots, liekes, garlic, and some other profitable rootes. But in those countries they have so many divers sortes, as I cannot reckon them; those which I now remember besides Papas, which is the principall, there is Ocas,[1] Yanaocas,[2] Camotes,[3] Batatas, Xiquimas, Yuca, Cochuchu, Cavi, Totora, Mani, and an infinite number of other kindes. They have likewise carried fruites to the Indies from these parts, the which prosper better there then the Indian plants do brought into Europe; the reason in my opinion is, for that there is greater variety of temperatures then in these partes, by meanes whereof the plants in those regions do rise and prosper better, fitting themselves to the temperature they require. And the rootes and plants which grow there, and were not transported from hence, are better then they be heere; for onions, garlic and parsnips are not in Spaine, as they be at Peru; and as for turnips, there is so great abundance, as they have increased in some places in such sort, that as they have affirmed to me, they could not destroy the aboundance which grew vp, for to sowe corne there. Wee have seene radish roots as bigge as a mans arme, very tender, and of a good taste, and of these rootes I have spoken, some serve for ordinairie meate, as the Camotres, which being rosted, serve as pulse. There are other rootes that serve them for dainties, as the Cochuchu. It is a small sweete roote, which some preserve for more delight. There are other rootes used to coole, as the xiquima, which is in qualitie very cold and moist, and in summer it

[1] *Oxalis tuberosa.*

[2] *Yana-oca* means black *oca.*

[3] Sweet potatoe.

Lib. iv.

refresheth and quencheth the thirst; but the Papas and Ocas be the chiefe for nourishment and substance. The Indians esteeme garlic above all the rootes of Europe, and hold it for a fruite of great force; wherein they want no reason, for it comforts and warmes the stomacke, and they eate it with an appetite rawe as it comes out of the ground.

Chap. xix.—*Of divers sortes of green Hearbes and Pulses, and of those they call Pepinos and Pine Apples, Strawberries of Chile, and of Cherries.*

Seeing wee have begunne with the lesser Plants, I might in few wordes touch that which concernes Flowers and Pothearbes, and that which the Latines call Arbusta, without any mention of trees. There are some kindes of these shrubbes at the Indies which are of very good taste. The first Spaniards named many things at the Indies with such Spanish names as they did most resemble, as Pines, Pepinos and Cherries, although they be very different fruites to those which are so called in Spaine. The Pines, or Pine-aples, are of the same fashion and forme outwardly to those of Castille, but within they wholly differ, for that they have neither apples, nor scales, but are all one flesh, which may be eaten when the skinne is off. It is a fruite that hath an excellent smell, and is very pleasant and delightfull in taste, it is full of iuyce, and of a sweete and sharpe taste, they eate it being cut in morcells, and steeped a while in water and salt. Some say that this breedes choler, and that the vse thereof is not very healthfull. But I have not seene any experience thereof, that might breede beleefe. They grow one by one like a cane or stalke, which riseth amongst many leaves, like to the lillie, but somewhat bigger. The apple is on the toppe of every cane, it

growes in hote and moist groundes, and the best are those of the Ilands of Barlovente. It growes not in Peru, but they carry them from the Andes, the which are neither good nor ripe. One presented one of these Pine-apples to the Emperour Charles the fift, which must have cost much paine and care to bring it so farre, with the plant from the Indies, yet would he not trie the taste. I have seene in New Spaine, conserves of these pines, which was very good. Those which they call Pepinos are not trees, but shrubbes, continuing but one yeere. They gave it this name, for that some of this fruite, and the most part, is in length and roundnes like to the cucumbers of Spain; but for the rest they differ much, for they are not greene, but violet, yellow, or white, neither are they thornie or rough, but polished and even, having a very different taste, and farre better then that of Spaine, for they have a sharpe sweet taste, very pleaasant when it is ripe, yet is it not so sharpe as the pine. They are very coole, full of liquor, and of easie digestion, and in time of heate, fit to refresh. They take away the rinde which is white, and all that remaines is meat. They grow in a temperate soile and require watering. And although for the resemblance they call them cucumbers, yet are there many of them round, and others of a different fashion, so as they have not the figure of cucumbers. I do not remember to have seene this kinde of fruite in New Spaine, nor at the Ilands, but vpon the *llanos* of Peru. That which they call the strawberry of Chile, is of the same sort, very pleasant to eate and comes neere the taste of cherries, but in all other things it differs much—for that it is no tree, but an hearbe, which growes little and spreades vpon the earth, casting forth this little fruite, the which in colour and graines resembles almost the mulbery, when it is white and not ripe, yet is it more rough and bigger then the mulbery. They say this little fruite is naturally found in the fieldes of

Lib. iv. Chile, where I have seene them. They set it vpon plants and branches, and it growes like any other shrubbe. Those which they call cherries, are verily the fruites of trees, and have more resemblance then the rest to our cherries. There are divers sorts, whereof they call some cherries of Nicaragua, the which are very red and small, and have little meat vpon the stone, but that little is of an exquisite taste, and of a sharpenes as good, or rather better, then cherries. They hold this fruite to be very wholesome, and therefore they give it to sicke folkes especially to provoke an appetite. There are others that be great and of a dark colour, they have much meat, but it is grosse and of no taste, like to the *Chavacanas*, which have every one two or three small stones. But to returne to pot-hearbs, I finde not that the Indians had any gardens of divers hearbs and plants, but did onely till the land in some partes for pulses, which they vse, as those which they call Frisoles and Pallares, which serve them as our lentils, beanes, or tares: neither have I knowne that these pulses, or any other kinds that be in Europe, were there before the Spaniards entred, who carried plants and pulses from Spaine thither, where they now grow and increase wonderfully, and in some places exceede greatly the herbs of these partes. As, if we speake of melons which grow in the vallie of Yca, in Peru, whose roote becomes a stalke that continues many yeeres, bearing melons yeerely, and they trimme it like vnto a tree: a thing which I do not know to be in any part of Spaine. But that is more monstrous of the Calibasses or Indian Pompions, and the greatnes they have as they grow, especially those which are proper to the Countrie, which they call *Capallos*; the which they eate most commonly in Lent, boiled and trimmed with some other sauce. There are a thousand kindes of Calibasses: some are so deformed in their bignes, that of the rinde cut in the middest and clensed, they make, as it were,

baskets to put in all their meat for their dinner. Of the lesser they make vessells to eate and drinke in, and do trimme them handsomely for many vses. I have spoken this of small plants; wee will now speake of greater; but first of their *Axi*, which is of the lesser.

CHAP. XX.—*Of Axi or Indian Pepper.*

They have not found at the West Indies any kinde of Spices proper or peculiar to them, as pepper, cloves, cinamon, nutmegges or ginger, although one of our company, who had travelled much, and in diverse partes, tolde vs, that in the deserts of the Iland of Iamaica he had found trees where pepper grewe. But they are not yet assured thereof, neither is there anie trade of these spices at the Indies. The ginger was carried from the Indies to Hispaniola, and it hath multiplied so, as at this day they know not what to do with the great aboundaunce they have. In the fleete the yeare 1587, they brought 22053 quintalls of ginger to Seville: but the naturall spice that God hath given to the West Indies, is that we call in Castille, Indian pepper, and in India, *Axi*, as a generall worde taken from the first land of the Ilands, which they conquered. In the language of Cusco, it is called *Vchu*, and in that of Mexico, *Chili*. This plant is well knowne, and therefore I will speake a little, onely wee must vnderstand, that in olde time it was much esteemed amongst the Indians, which they carried into places where it grew not, as a marchandise of consequence. It growes not vpon cold grounds, as on the Sierra of Peru, but in hote valleys, where it is often watered. There is of this *Axi* of diverse colours, some is greene, some red, some yellow, and some of a burning color, which they call Caribe, the which is extreamely sharpe and biting; there is an other sorte not so sharpe, but is so

sweete, as they may eate it alone as any other fruite. There is some of it very small and pleasing in the mouth, almost like to the smell of muske, and is very good. That which is sharpe and biting in this *Axi*, be the veines and the graine onely: the rest is not: for that they eate it greene and dry, whole and beaten, in the pot, and in sauces, being the chiefe sauce, and all the spice they have at the Indies. When this *Axi* is taken moderately, it helps and comforts the stomacke for digestion: but if they take too much, it hath bad effects, for of its self it is very hote, fuming, and pierceth greatly, so as the vse thereof is preiudiciall to the health of yong folkes, chiefely to the soule, for that it provokes to lust. It is strange, that although the fire and heate of it be well knowne by experience, and that every man saies it burnes in the mouth and the stomacke; yet some, yea many, holde, that the Indian pepper is not hote, but colde, and well tempered. But I might say to them, the like should be of pepper; though they brought me as many experiences as they would of the one and the other: yet is it a very mockery to say it is not hote, seeing it is so in the highest degree. They vse salt to temper this *Axi*, having great force to correct it, and so they moderate one with the other by the contrarietie that is in them. They vse also Tomates, which are colde and very wholesome. It is a kinde of graine great and full of iuyce, the which gives a good taste to sauce, and they are good to eate. They have generally throughout the Indies of this Indian pepper, at the Ilands, New Spaine, Peru, and all the rest that is discovered. As mays is the generall graine for bread, so *Axi* is the most common spice for sauces.

Chap. xxi.—*Of the Plantain.*

Comming to the greater plants or trees at the Indies, the first that shall be needefull to treate of is the Plantain,[1] or Plantano, as the vulgar call it. I have been sometimes in doubt whether the plane which the antients have so much celebrated, and that of the Indies, were of one kinde. But if we compare this with what the antients write of the other, without all doubt they will appeare to be very different. The reason why the Spaniards call it platano (for the Indians had no such name) was, as in other trees, for that they have found some resemblance of the one with the other, even as they called some fruites prunes, pines, and cucumbers, being far different from those which are called by those names in Castille. The thing wherein was most resemblance, in my opinion, betwixt the platanos at the Indies and those which the antients did celebrate, is the greatnes of the leaves, for that these have them very great and coole, and the antients did likewise much esteeme them for the greatnesse and coolenesse of their leaves. It is also a plant that requireth much water, and in a manner continually, which agrees with the sacred Scripture that saith: "Like to the plane neere the waters". But in truth there is no more comparison nor resemblance of the one with the other then there is, as the Proverb saith, betwixt an egge and a chesnut. For, first, the antient plane carries no fruit, at the least they made no account therof, but the chiefest reason why they esteemed it was for the shade, for that there was no more Sunne vnder a plane than vnder a roofe. And contrariwise, the reason why they shoulde regarde it at the Indies, yea make great accompt thereof, is by reason of this fruite, which is very good; for they have little shade. Moreover, the antient plane had the body so bigge, and the boughs so spread, that Pliny reporteth of one Licinius, a Romane

Lib. iv.

Eccl. ii, 4.

Plin., lib. ii, ca. 1.

[1] Platano.

Lib. iv. Captaine, who, with eighteene of his companions, dined at ease in th' hollow of one of these planes: and of the Emperour Caius Caligula, who, with eleven of his guests, feasted vpon the toppe of an other plane, where he made them a sumptuous banquet. The Indian platanos have neither so great nor hollow bodies, nor so broade boughs. He saieth, moreover, that the auntient planes grew in Italie and in Spaine, although they had beene brought thither from Greece; and first from Asia, but the Indians platanos growe neither in Italy nor in Spaine. I say they growe not there, for although we have seene some at Seville in the Kings gardens, yet they prosper not, nor are of any account. Finally, whatsoever they find apparently alike betwixt the one and the other is really very different. For although the leaves of the auntient planes were very great, yet were they not such, nor so great as those at the Indies, seeing that Pliny compares it to the leafe of a vine or figge tree.

Plin., lib. xi, c. 16.

The leaves of the Indian platano are of a wonderfull bignes, and are, in a maner, sufficient to cover a man from the foote to the head, so as no man can doubt but there is great difference betwixt the one and the other. But put the case that this Indian platano be different from the antient, yet deserves it no lesse commendation, it may be more, by reason of the profitable qualities it hath. It is a plant that makes a stocke within the earth,[1] out of the which springs many and sundrie sprigges, divided and not ioyned together. These sprigges grow bigge, every one making a small tree apart, and in growing they cast forth these leaves, which are of a fine greene, smooth, and great, as I have said. When it is growne to the height of an *estado* and a halfe, or two, it puttes forth one only bough of fruite, whereon sometimes there are great numbers of this fruite, and sometimes lesse. I have tolde vpon some of these boughs three hundred, whereof every one was a spanne long, more

[1] "Es planta que en la tierra hace sepa, y della saca diversos pimpollos, sin estor asido ni travado uno de otro."

or lesse, and two or three fingers bigge; yet is there much difference heerein betwixt some and others. They take away the rinde, and all the rest is a firme kernell and tender, good to eate, and nourishing. This fruite inclines more to cold then heate. They are accustomed to gather the boughs or clusters, as I have said, being greene, and put them into vessells, where they ripen, being well covered, especially when there is a certaine hearbe mingled with it, which serves for this effect. If they suffer them to ripen on the tree, they have a better taste, and a very good smell, like to *camuesas*. They last almost all the yeere, for that there are alwaies yong ones that grow out of this stocke; so as when one endes another beginnes to yeelde his fruite; the one is halfe ripe, and the other beginnes to bud anew, so as one succeedes another, and the fruite continues the whole yeere. In gathering the cluster, they cut the sprigge or stalke, for that it beares but one, and never but once: but as I have saide, the stalke remaines, and castes forth new stalkes, vntill it growes olde and dies. This plantain continues many yeares, and requires much moisture, and a very hote ground. They put ashes at the foote of it, for the better entertaining therof, and they make small groves, and very thicke, which are of great profit and revenue vnto them; for that it is the fruite they vse most at the Indies, and is generall in all places, although they say the first beginning comes from Ethiopia. And trueth the Negros vse them much, and in some places they serve them as bread, yea they make wine of them. They eate this fruite rawe like other fruits; they likewise roast it, and make many sorts of potages and conserves, and in all thinges it serveth very well. There is a kinde of small plantains, white, and very delicate, which in Hispaniola they call Dominiques. There are others which are stronger and bigger, and red of colour. There growe none in the kingdome of Peru, but they are brought from

Lib. iv.

the Indies, as from Mexico, Cuernavaca, and other vallies. In Tierra Firme, and in some Ilands, there are great store of plantains, like vnto thicke groves. If this plant were fit for the fire, it were the most profitable of all others, but it is nothing fit, for neither the body nor the boughs will burne, and much lesse will it serve for building, being a sappy wood, and without force. Yet Don Alonzo de Ercilla, as it is said, vsed the leaves of this tree dried, to write a part of the *Araucana*, and in truth it may serve for want of paper, seeing that the leafe is as broade as a sheet of paper, or little lesse, and foure times as long.

Chap. xxii.—*Of Cacao and Coca.*

Although the plantain be the most profitable, yet the Cacao is most esteemed in Mexico, and the Coca in Peru, in which two trees they have great superstition. The Cacao is a fruit little lesse than almonds, yet more fatte, the which being roasted hath no ill taste. It is so much esteemed amongest the Indians (yea and among the Spaniards) that it is one of the richest and the greatest traffickes of New Spaine, for being a drie fruite, and that keepes long without corruption, they carry whole shippes loaden from the province of Guatimala. The last yeare an English Pirat did burne in the Port of Guatulco in New Spaine above a hundred thousand cargoes of Cacao. They vse it instead of money, for with five Cacaos they buy one thing, with thirtie an other, and with a hundred an other, without any contradiction; and they vse to give it to the poore that beg for almes. The chiefe vse of this Cacao, is in a drinke which they call Chocolaté, whereof they make great accompt in that Country, foolishly, and without reason, for it is loathsome to such as are not acquainted with it, having a skumme or froth that is very vnpleasant to taste, if they be not very well conceited thereof. Yet it

is a drinke very much esteemed among the Indians, where-with they feast noble men as they passe through their Country. The Spaniards, both men and women, that are accustomed to the Countrey, are very greedy of this Chocolaté. They say they make diverse sortes of it, some hote, some colde, and some temperate, and put therein much of that Chili; yea they make paste thereof, the which they say is good for the stomacke, and against the catarrh. Whatsoever it be, such as have not been nourished there, are not very curious thereof. The tree whereon this fruite growes is of reasonable bignesse, and well fashioned; it is so tender, that to keepe it from the burning of the Sunne, they plant neere vnto it a great tree, which serves onely to shade it, and they call it the mother of Cacao. There are plantations where they are grown like to the vines and olive trees of Spaine. The province where there is greatest trade in cacao is Guatimala. There growes none in Peru, but this country yields Coca, respecting which there is another still greater superstition. It seems almost fabulous. But in trueth the trafficke of Coca in Potosi doth yearley mount to above half a million of dollars, for that they vse foure scoure and tenne, or foure score and fifteen thousand baskets every yeare. In the yeare one thousand five hundred eighty three, they spent a hundred thousand. A basket of Coca in Cusco is woorth two peeces and a halfe and three; and in Potosi it is readily worth foure peeces, and five Tomines, and five peeces tried.[1] It is a kinde of marchandise, by the which all their Markets and Faires are made with great expedition. This Coca, whereof they make such account, is a small greene leafe, which groweth vpon small trees about a fadome high, and in hote and moyst grounds; every foure moneths it casts forth this leafe, which they call Tresmitas; it requires great care in planting, beeing very tender, and much more to keepe it when it is gathered. They laie it in order in long and

[1] "Pesos ensayados."

Lib. iv. narrow baskets, and laden theyr sheepe of the country, which go in troopes with one, two, or three thousand baskets of this marchandise. They bring it commonly from the valleys of the Andes, where there is an extreame heate, and where it raines continually the most part of the yeare; wherein the Indians endure much labour and paine to entertaine it, and often many die, for that they go from the Sierra and colde places to till and gather them in the valleys. And therefore there hath beene great question and diversity of opinions among learned men, whether it were more expedient to pull vp these trees, or to let them growe, but in the end they remained. The Indians esteeme it much, and in the time of their Kings Yncas it was not lawfull for any of the common people to vse this Coca without licence from the Governor. Their vse is to carry it in their mouthes, chawing it and sucking out the iuyce, but they swallow it not. They say it gives them great courage, and is very pleasing vnto them. Many grave men holde this as a superstition and a meere imagination; for my part, and to speake the truth, I perswade not my selfe that it is an imagination; but contrariwise, I thinke it works and gives force and courage to the Indians; for we see the effects which cannot be attributed to imagination, as to go some daies without meate, but onely a handfull of Coca, and other like effects. The sauce wherewith they doe eate this Coca is proper enough, whereof I have tasted, and it is like the taste of leather. The Indians mingle it with the ashes of bones, burnt and beat into powder, or with lime, as others affirme, which seemeth to them pleasing and of a good taste; and they say it dooth them much good. They willingly imploy their money therein, and vse it as money; yet all these things were not inconvenient, were not the hazard of the trafficke thereof, wherein so many men are occupied. The Lords Yncas vsed Coca as a delicate and royall thing, which they offered most in their sacrifices, burning it in honor of their idolls.

CHAP. XXIII.—*Of Maguey, Tunal, Cochenille, Anir, and Cotton.*

Maguey is a tree of wonders, whereof the Notaries or Chapetons (as the Indians call them) are wont to write miracles, in that it yeeldeth water, wine, oyle, vineger, hony, sirrope, threede, needles, and a thousand other things. It is a tree which the Indians esteeme much in New Spaine, and have commonly in their dwellings some one of them for the maintenaunce of life; it grows in the fields, and hath great and large leaves, at the end whereof is a strong and sharp point, which serves to fasten like pins, or to sowe as a needle; and they draw out of this leafe as it were a kinde of threed which they vse. They cut the body, which is big, when it is tender, wherein is a great hollownesse, by which the substance mounts from the root, and is a liquor which they drink like water, being sweet and fresh. This liquor being sodden, turnes like wine, which growes to vinegar, suffring it to sowre, and boyling it more, it becomes as hony, and boyling it halfe, it serves as sirrope, which is healthfull enough and of good taste—in my iudgement it is better then the sirrope of raisins. Thus doe they boyle this liquor, and vse it in diverse sortes, whereof they drawe a good quantitie, for that in some seasons they draw daily some pots of this liquor. There are also of these trees in Peru, but they are not so profitable as in New Spaine. The wood of this tree is hollow and soft, and serves to keepe fire, like to the match of a harquebuze, and preserves it long; I have seene the Indians vse it to that end.

The Tunall[1] is another famous tree in New Spaine: if we may call a tree a heape of leaves gathered together one vpon another, it is the strangest fashioned tree of all other,

[1] Prickly pear.

for first there grows one leafe out of the ground, then another vpon it, and so one vpon one, till it commeth to his perfection; but as the leaves grow vp and on the sides, those vnderneath doe become great, and loose in a manner the forme of leaves, making a bodie and braunches, which are sharpe, pricking and deformed, so as in some places they doe call it a Thistle. There are thistles or wilde Tunalls, the which do carry no fruite, or else it is very pricking, without any profit. There are likewise planted Tunalls which yeelde fruite much esteemed amongst the Indians, the which they call Tunas, and they are much greater then Plumbes, and long. They open the shell which is fatte, and within it is meate and small graines, like to those of figges, which be very sweete; they have a good taste, especially the white, which have a pleasing smell, but the red are not vsually so good. There is another sorte of Tunalls which they esteeme much more, although it yeeldes no fruit, yet it beares an other commoditie and profit, for certayne small wormes breede in the leaves of this tree, when it is well husbanded, and are therevnto fastned, covered with a certaine small fine web, which doth compasse them in daintily; and this is that Indian Cochinille so famous, and wherewith they dye. They let it drie, and being dried, carry it into Spaine, which is a great and rich marchandise. The *arroba* of this Cochinille or graine is worth many ducats. In the fleete, the yeare 1587, they did bring five thousand sixe hundred seventy seven *arrobas*, which amounted to two hundred foure score three thousand seven hundred and fifty peeces, and commonly there comes every yeare as great a wealth.

These Tunalls grow in temperate grounds inclining to colde. In Peru there growes none to this day, I have seene some plants in Spaine, but they deserve not estimation. I will speake something likewise of the Añir, although it comes not from a tree, but from an hearb, for

that it serveth for the dying of cloth, and is a marchandise. It groweth in great aboundance in New Spaine, from whence there came in the fleete I mentioned 5263 *arrobas*, or therabouts, which amounted to so many peeces. Cotton likewise growes vpon small shrubs and great trees like to little apples, which doe open and yeelde forth this webbe; which being gathered, they spinne to make stuffes. It is one of the things at the Indies of greatest profite, and most in vse, for it serves them both insteed of flaxe and wooll to make their garments. It groweth in a hote soyle, and there is a great store in the vallies and sea coast of Peru, in New Spaine, the Philippines and China. But the greatest store of any place that I know is in the province of Tucuman, in that of Santa Cruz de la Sierra, and at Paraguay, whereas Cotton is their chiefe revenue. They carry cotton into Spaine from the Iland of Santo Domingo; and the yeare that I spake of there came 64,000 *arrobas*. At the Indies whereas this cotton growes, they make cloth, which both the men and women vse commonly, making table napkins thereof, yea and sailes for their shippes. There is some coarse, and other that is fine and delicate; they dye it into diverse colours, as wee doe by our woollen cloth in Europe.

Chap. xxiv.—*Of Mameys, Guayavos, and Paltas.*

These Plants we have spoken of are the most profitable of the Indies, and the most necessary for the life of man: yet there are many other that are good to eate, among the which the Mameys are esteemed, being in fashion like to great peaches, and bigger; they have one or two stones within them, and their meate is somewhat hard. There are some sweete, and others somewhat sower, and have the rinde hard. They make conserves of the meate of this

fruite, which is like to marmelade. The vse of this fruite is reasonable good, but the conserves they make thereof are better. They grow in the Ilands. I have not seene any in Peru. It is a great tree, well fashioned, and a reasonable faire leafe. The Guayavos be other trees which commonly carry an ill fruite, full of sower kernells, and are like to little apples. It is a tree little esteemed vpon the Tierra Firme and at the Ilands, for they say it smells like to the *chinches*. The taste and savour of this fruite is very grosse, and the substance vnholesome. In Santo Domingo and other Ilands, there are whole mountaines full of these Guayavos, and they say there was no such kinde of trees before the Spaniards came there, but that they brought them they know not from whence. This tree hath multiplied infinitely, for that there is no beast that will eate the kernells or the graine, so as being thus scattered on the earth, being hote and moist, it multiplies in this sort. In Peru, the Guayavos differs from others, for that the fruite is not red, but white, neither hath it any ill smell, but is of a very good taste; and of what sort of Guayavos soever it bee, the fruit is as good as the best of Spaine, especially of those which they call Guayavos de Matos, and of other little white Guayavillas. It is a fruit reasonably holesome, and agrees with the stomache, being of a strong digestion, and cold. The Paltas[1] commonly are hote and delicate. The Palta is a great tree, and carries a faire leafe, which hath a fruite like to great peares: within it hath a great stone, and all the rest is soft meate, so as when they are full ripe, they are, as it were, butter, and have a delicate taste. In Peru the Paltas are great, and have a very hard skale, which may be taken off whole. This fruite is most vsuall in Mexico, having a thinne skinne, which may be pilled like an apple: they hold it for a very holesome meate, and, as I have said, it declines a little from heat. These Mamayes, Guayavos, and Paltas,

[1] Alligator pears.

be the Indians peaches, apples, and peares; and yet would I rather choose them of Europe. But some others by vse, or it may be by affection, doe more esteeme those of the Indies. I doubt not but such as have not seene nor tasted of these fruites, will take small pleasure to reade this discourse, yea, they will grow wearie to heare it, as I have done in writing it, which makes me to abridge it, speaking of some other sortes of fruites, for it were impossible to intreate of them all.

Chap. xxv.—*Of Chicoçapote, Anonas, and Capolies.*

Some, desirous to augment thinges at the Indies, have given out that there is a fruite like vnto quince marmalade, and another which tastes like a meate made of almonds and creame,[1] for that the taste of them deserves these names. The marmalad is that which they call Zapotes or Chicoçapotes, which have a sweete taste, and neere vnto the colour of marmalade. Some Creoles (for so they call the Spaniards borne at the Indies) say that this fruite passeth all the fruites of Spaine in excellency; yet am I not of that opinion; at the least they say, it passeth all other fruites in taste; but I will not dwell vpon this question, for that it doth not deserve it. Those Chicoçapotes or Zapotes, wherein there is little difference, grow in the hotest partes of New Spaine, neither have I knowledge of any such fruite in the firme land of Peru. As for the Blanc-mange, it is that Anona or Guanavana which growes in Tierra Firme, which is fashoned like vnto a peare, a little sharpe and opened, within it is white, tender, and soft like butter, sweete and of a pleasing taste. It is no whit meate, though they call it Blanc-mange, but in truth they have added much vnto it by giving this name: although it be delicate and of a sawcie and delicious taste,

[1] "Manjar-blanco."

Lib. iv.

and according to the iudgement of some it is held for the best fruite of the Indies, yet hath it many blacke kernells within it, and the best which I have seene is in New Spaine, where the Capolies also grow, which be like vnto cherries, with a stone, but somewhat bigger: the forme and shape is like vnto cherries, of a good taste, being sweete and sharpe; but I have not seene any Capolies in any other Countrie.

Chap. xxvi. — *Of various sortes of fruit Trees, of Cocos, Almondes of the Andes, and Almonds of Chachapoyas.*

It were not possible to reckon all the fruites and trees at the Indies, for that I remember not many, and there are many more whereof I have no knowledge; and in my opinion, it were troublesome to speake of all those I now remember. There are some grosse fruites, as those which they call Lucumas (of which fruite they speake in a proverbe, that it is a counterfet price), the Guavas, Paccayes, Hobos, and the nuttes which they call imprisoned;[1] which fruites seeme to many to be the same kinde of nuttes we have in Spaine; yea, they say, if they were often transplanted from place to place, they would carry nuttes altogether like to those of Spaine. And the reason why the fruite is so vnpleasant is, for that they are wilde. To conclude, we ought well to consider the providence and riches of the Creator, who impartes to so diverse partes of the world, such varietie of fruite trees, all for the service of man that inhabites the earth. And it is an admirable thing to see so many different formes, tastes, and effects vnknowne, whereof we did never heare speake before the discoverie of the Indies. And whereof Plinie himselfe, Dioscorides, and Theophrastus (yea, the most curious), had no knowledge, notwithstanding all their search and dilligence. There have beene some curious men of our

[1] Encarceladas.

age, which have written some Treatises of the Indian plants, of hearbes, and roots, and of their operations for phisicke, to whom they may flie for their better instruction. I onely pretend (and in few words) to treate superficially of that which comes to memory touching this subject; yet do I not thinke it good to passe away vnder silence the Cocos or Indian palmes, by reason of a very notable propertie it hath. I call them palmes, not properly, or that it beares dates, but that they are trees like to other palmes. They are high and strong, and the higher they grow the broader they stretch out their branches. These Cocos yield a fruit which they likewise call Cocos, whereof they commonly make vessells to drinke in, and some they say have a vertue against poison, and to cure the paine in the side. The nutte and meate being dried, is good to eate, and comes neere in taste to greene chesnuttes. When the Coco is tender vpon the tree, the substance within it is, as it were, milke, which they drinke for daintines, and to refresh them in time of heate. I have seene of these trees in San Juan de Puerto Rico, and other parts of the Indies, and they report a wonderfull thing, that every moneth or Moone, this tree casts forth a new branch of this Cocos; so as it yeeldes fruite twelve times in the yeere, as it is written in the Apocalips: and in truth this seemes like vnto it, for that all the branches are of different ages, some beginning, others being ripe, and some halfe ripe. These Cocos are commonly of the forme and bignes of a small melon. There is of another kinde which they call Coquillos, the which is a better fruite, whereof there be some in Chile. They are some what lesse then nuttes, but more round. There is another kinde of Cocos, which have not the kernell so oylie, but within they have a great number of small fruites like almonds, like vnto the graines of a Pomegranate.

These almonds are thrice as bigge as those of Castill, and resemble them in taste, though they be more sharpe, and

Lib. iv. likewise moist and oylie. It is a good meate; they vse it also in feasting, for lack of almonds to make marchpanes, and such other things.[1] They call them Almonds of the Andes, for that these Cocos growe aboundantlie vpon the Andes of Peru; they are so strong and hard, as to open them they must beate them with a great stone, when they fall from the tree. If they chance to hit anie one on the head, he hath no more need of any surgeon. It is an incredible thing, that within the hollow of these Cocos, which are no bigger than the rest, or little more, there are such a multitude of these almonds. But as touching almondes and other fruites, all trees must yeelde to the almonds of Chachapoyas, which I cannot otherwise call. It is the most pleasing, delicate, and wholesome fruit of all that I have seene at the Indies; yea, a learned Physician did affirme, that amongest all the fruits at the Indies or in Spaine, none came neere these Almonds in excellencie. There are both greater and lesse than those of the Andes, but all are fatter than those of Castille. They are very tender to eate, and they have much iuyce and substance, and are oylie and very pleasant: they grow vpon high trees, bearing great leaves. And as it is a pretious thing, so nature hath given them a good covering and defence, being in a huske somewhat bigger and more pricking than a chesnut. Yet when this huske is drie, they easily draw foorth the graine. They say that the apes, who are very greedie of this fruit, and whereof there is aboundance in Chachapoyas of Peru (which is the onely countrey, to my knowledge, where these trees doe growe), fearing they should pricke them, and yet desirous to draw forth the almond, they cast them from the toppe of the tree against the stones, and having broken the huske, they open them to eate the fruite at their pleasure.

[1] "Maçapanes."

Chap. xxvii.—*Of many and diverse flowers, and of some trees which yeelde onely a flower, and how the Indians do vse them.*

The Indians are great lovers of flowers, and in New Spaine more than in any other parte of the worlde, and therefore they are accustomed to make many kindes of nosegaies, which there they call *Suchiles*, with such prety varietie and art, as nothing can be more pleasing. They have a custome amongst them, that the chiefest man offer their *Suchiles* or nosegayes in honour to Noblemen, and to their guests; and they presented vs with such aboundance as we passed through that Country, as we knew not what to doe with them; and at this day they vse the principall flowers of Castill to that end, for that they grow better there than heere, as gilliflowers, roses, iasmins, violets, orange flowers, and other sortes which they have transported out of Spaine. The rose tree groweth too fast in some places, so as they beare no roses. It chaunced one day that a rose garden was burned, and the sprouts which sprouted out, presently bare aboundance of roses, and thereby they learnd to prune them, and to cut off the superfluous braunches, so as at this day they yeeld reasonable store of roses. But besids these kindes of flowers, which have beene transported from hence, there are many others whose names I do not know, whereof some are red, blew, yellow, violet and white, with a thousand different colours, which the Indians did vse to carry on their heads, as feathers for ornament. True it is, that many of these flowers are onely pleasing to the sight, having no good savour, eyther they are grosse, or else they have none at all; and yet there be some of an excellent scent, as those which growe vpon a tree termed by them Floripondio[1] or carry flower, which beares no fruit, but onely these flowers, which are greater than the Lillie, and are like to

[1] The *Datura*.

Lib. iv.

little bells, all white, which have within them small threeds, as we see in the lillie: it leaves not all the yeare to beare these flowers, whose smell is woonderfull sweete and agreeable, especially in the cool of the morning. The Viceroy Don Francisco de Toledo sent of these trees vnto King Philip, as a thing woorthy to be planted in royall gardens. In New Spaine the Indians esteeme much of a flower, which they call Yolosuchil, which signifieth flower of the heart, for that it beares the forme of a heart, and is not much lesse. There is likewise an other great tree, which beares this kinde of flower, without any fruite; it hath a strong savour, and in my opinion, too violent, the which may seeme to some more pleasing. It is a thing well knowne, that the flower which they call of the Sunne, hath the figure of the Sunne, and turnes according to the motion thereof. There are other kindes which they call pinks of the Indies, the which are like to a fine orange tawnie velvet, or a violet; those have no scent of any account, but onely faire to the eye. There are other flowers, which besides the beautie of the eye, although they have no smell, yet have they a savour like vnto cresses, the which if you shoulde eate without looking of them, you would iudge them to be no other. The flower of Granadilla[1] is held for an admirable thing, and they say it hath in it the markes of the passion, and that therein they note the nailes, the pillar, the whips, and crowne of thornes, and the woundes, wherein they are not altogether without reason, and yet to finde out and observe these things, it requires some pietie to cause beleefe: but it is very exquisite and fair to the eye, although it have no smell. The fruite which they also call Granadilla is eaten and drunke; or to speake more properly, sucked for a refreshing; this fruite is sweete, and too sweete after some opinions. The Indians were vsed in their feasts and dances to carry flowers in their handes, and the Kings and Noblemen carry them for their greatnes. For this reason we

[1] Passion flower.

commonly see pictures of their ancient people with flowers in their hands, as heere they paint people with gloves in their hands. I thinke this sufficient touching flowers. They vse basil for the same purpose of perfume and recreation, although it is no flower, but an hearbe onely, which they were wont to plant carefully in their gardins, but now they regard it not, so as it growes onely about their pooles and ponds.

Chap. xxviii.—*Of Balsam.*

The Soveraigne Creator hath not onely fashioned plants to serve as meat, but also for recreation, for phisicke, and for the cure of man. I have spoken somewhat of those that serve for nourishment, which is the chiefe, and a little of those that serve for recreation, and now we are to intreate of those which are proper for phisicke, wherein I will speake something. And although all plants are medicinall when they are well knowne and applied, yet there are some things especially, which wee see directly ordained by the Creator for phisicke, and for the health of man, as liquors, oiles, gummes, and rozines, which come from divers plants and hearbes, and which easily shew by experience whereto they are proper. Above all, balsam is with reason esteemed for the excellent smell, but much more for the exquisite effect it hath to cure woundes and divers other remedies, as experience hath taught in the cure of diseases. The balsam which comes from the West Indies is not of the same kind of true balsam which they bring from Alexandria or Cairo, and in old time was in Iudea, which Iudea (as Plinie writeth) did of all the world possesse this greatnesse, vntill the Emperor Vespasian broght it to Rome and into Italie. The reason why I say the liquor of the one and the other are not of one kinde, is for that the trees from whence it comes are very different; for the balsam tree of Palestine

Plin., lib. xii, c. 25.

Lib. iv. was small, and fashioned like to a vine (as Plinie reporteth, who had seene it), and those that at this day that have seene
Cant. i. them in the East, say as much. As also the holy Scripture calles the place where the balsam grows, Vine of Engaddi, for the resemblance it hath to vine. At the Indies I have seene the tree from whence they draw the balsam, which is as bigge as a pomegranate tree, and some thing neere the fashion; and if my memory failes me not, it hath nothing
Strab., lib. xvi. Geograp. common with the vine, although that Strabo writes that the ancient tree of balsam was of the bignes of a pomegranate tree. But in other respects they are much alike, as likewise they be in their admirable smells, and in the cure and healing of wounds, in colour and substance, seeing they report of other balsams that there is some white, vermilion, greene, and blacke, the which is likewise seene in that of the Indies. And as they drew forth the balsam of the old world by cutting and making incisions in the barke, to cause the liquor to distill out, so do they with that at the Indies, although it distilles in greater aboundance. And as in the ancient there is one kinde which is pure, the which they call Opobalsamum, which be the very teares that distill, so as there is another sort which is not so exquisite, the which they drawe from the barke and leaves strained and boiled on the fire, the which they call Xilobalsamum. The like is also in the Indian balsams. There is one pure that distilles from the tree, and others that the Indians draw out by straining and boiling the leaves and wood; yea, they do sophisticate and augment it with other liquors, to make it increase. It is not without reason they call it balsam, for in truth it is so (although it be not of the same kinde of the ancient), yet it is much esteemed and should be more, if the great aboundance were not the cause, as in emeraldes and pearles. That which importes most, is the vse wherein it is imployed, for incense in the Church. The Apostolike See hath given

libertie to use creame of balsam at the Indies in the sacrament of confirmation and other ceremonies which they vse. They bring balsam to Spaine from New Spaine, from the Province of Guatimalla, from Chiapa, and other places where it aboundes most, although the most esteemed be that which comes from the Iland of Tolu, which is in Tierra Firme, not farre from Carthagena. This balsam is white, and commonly they hold the white to bee more perfect then the red, although Plinie gives the first place to the vermilion, the second to the white, the third to greene, and the last to blacke; but it seemes that Strabo esteemed more the white balsams, as we do. Monardes discourseth at large of the Indian balsam in the first and second part, especially of that of Carthagena and Tolu, which is all one. I have not found that the Indians in olde time did much esteeme balsam, nor yet imploy it in any important vse, although Monardes saieth, that the Indians cured their woundes therewith, and from thence the Spaniardes learned it.

Plin., lib. xii, c. 25.

Strab., libr. xvi. Geograp.

Chap. xxix.—*Of Amber, and other Oyles, Gums, and Drugges, which they bring from the Indies.*

Next to balsam, liquidambar holdes the second place: it is another liquor which is likewise sweete and medicinall; but more thicke, and turnes into a paste of a hote complexion, and a good perfume, the which they apply to woundes, bruises, and other necessities; wherein I will referre my selfe to the Physicians, especially to Doctor Monardes, who in his first Part hath written of this liquor, and many others that are medicinal, which come from the Indies. This liquidambar comes from New Spaine, which hath that advantage above other Provinces in goomes, liquors, and iuyce of trees, whereby they have such aboundance of matter, for perfume and phisicke, as is the Animé, whereof there comes great

Lib. iv.

store, copall, or suchicopal, which is another kinde, storax and incense, which have excellent operations, and have a very good smell, fit for fumigations. Likewise the Tacamahaca and Caraña, which are also very medicinall. They bring likewise from this Province oyle of grease which they call *aveto*, and which the Physicians and Painters vse much, the one for plasters, the other to varnish their pictures. They bring also for the Physicians Cassia fistula, the which growes plentifully in Santo Domingo. It is a great tree, which carries these canes as his fruite. They brought in the fleete wherein I came from Santo Domingo fortie eight quintalles of Cassia fistula. Sarsaparilla[1] is not lesse knowne, for a thousand remedies wherein it is vsed. There came in the same fleete fiftie quintalles from the same Iland. There is much of this Sarsaparilla at Peru, and most excellent in the Province of Guayaquil, which is vnder the Line. Many go to be cured into this Province, and it is the opinion of some, that the pure water onely which they drinke, gives them health, for that it passeth by rootes as I have said, from whence it drawes this vertue, so as there needes no great covering or garments to make a man sweate in that countrie. The wood of Guayacan, which they call Lignum sanctum, or Indian wood, growes aboundantly in the same Ilands, and is as heavie as yron, so as it presently sinkes in the water; heereof they brought in the same fleete 350 quintalls, and they might have brought twentie, yea, a hundred thousand of this wood, if there were vse for it. There came in the same fleete, and from the same Iland, 130 quintalles of Bresill wood, the which is fierie red, so well knowne, and much vsed in dying and other things. There are at the Indies infinite numbers of other aromaticall woodes, gummes, oyles, and drugges, so as it is not possible to name them all, neither doth it now much import. I say onely, that in the time of the Kings Yncas of Cusco,

[1] See my translation of *Cieza de Leon*, pp. 200, 395.

and the Mexicaine Kings, there were many great personages expert in curing of diseases with simples, and did goodly cures, having the knowledge of the many vertues and properties of hearbes, rootes, woodes, and plants which grow there, and whereof the Ancients of Europe have had no knowledge. There are a thousand of these simples fit to purge, as the rootes of Mechoaçan, the *piñones de la Puna*, the conserve of Guanuco, the oyle of Fig-trees, and many other things, the which being well applied, and in time, they hold to be of no lesse efficacie then the drugges that come from the East. The which may be seene in reading the discourse which Monardes hath made in the first and second Part, where he treates amply of Tobacco, whereof they have made notable experiences against poison. Tobacco is a small tree or plant, common enough, the which hath in it rare vertues, as amongst others it serves for a counterpoison, like to many and divers other plants: for the Creator of all things hath imparted his vertues at his pleasure, not willing that any thing should grow idle. But it is another soveraigne gift to man, to know them and their proper vses, the which the same Creator gives to whome hee pleaseth. Dr. Francisco Hernandez hath made a goodly worke vppon this subiect, of Indian plants, liquors, and other medicinal things, by the Kings expresse commission and commaundement, causing all the plants at the Indies to be lively painted, which they say are above a thousand two hundred; and that the worke cost above three score thousand ducats: out of which worke the Doctor Nardo Antonio, an Italian Physician, hath made a curious extract, sending him to the foresaid bookes that desires more exactly to knowe the plants at the Indies, especially for physicke.

Chap. xxx.—*Of great forrests at the Indies, of Cedars, of Ceyvas, and other great trees.*

Lib. iv.

Although from the beginning the earth did bring foorth plants and trees by the commandement of the Lord, yet hath it yielded more in one place than in another; and besides the plants and trees, which by the industry of man have beene transplanted and carried from place to place, there are many which Nature it selfe hath brought forth. I do beleeve, that of this sort there are more at the new world, which we do call the Indies, either in number or diversitie, than in the olde, as Europe, Asia, or Affrike. The reason is, for that the climate at the Indies is generally hot and moist, as we have declared in the second Booke, against the opinion of the Antients, which causeth the earth naturally for to bring foorth an infinite number of wild plants, whereby the greatest part of the Indies is inhabitable, being almost impossible to travell by reason of the woodes and thicke forrests that are there, which they labour dailie to cut downe. It hath bin needefull (passing through some partes of the Indies, especially where they newly entred) to make their way, in cutting downe trees, and pulling vp bushes, so that (as some religious men have written that have tried it) they coulde not sometimes have passed above a league in a day. One of our brothers (a man worthy of credite) reported vnto vs, that being straied in the mountaines, not knowing which way he shoulde passe, he fell among such thicke bushes that he was forced to go vpon them, without setting foote to the ground, by the space of fifteene whole dayes: and to see the Sunne, or to marke some way in this thicke forrest full of wood, he was forced to climbe to the top of the highest trees to discover. He that shall reade the discourse of his travell, how often hee was lost, and the wayes he passed, with the strange

adventures that happened vnto him, the which I have written briefly, being so worthy the knowledge, and having my selfe travelled a little over the mountaines of the Indies, were it but the eighteene leagues betwixt Nombre de Dios and Panama, may well iudge what great forrests there are. So as having no winter in those parts, to nip them with colde, and the humiditie of the heavens and earth being so great, as the mountaines bring foorth infinit forrests, and the plaines, which they call Savannas, great plenty of grasse: there is no want of pasture for feeding, of timber building, nor of wood for fewell. It is impossible to set downe the differences and formes of so many wilde trees, for that the names of the greatest parte are vnknowne.

Cedars, in olde time so much esteemed, are there very common, both for buildings and shippes, and they are of diverse sortes, some white, and some redde, very odoriferous. There are great store of laurels, very pleasant to beholde, vpon the Andes of Peru, vppon the mountaines of Tierra Firme, in the Ilands, in Nicaragua, and in New Spaine. There are also infinite numbers of Palmes and Ceyvas, whereof the Indians make their Canoes, which are boates made of one peece. They bring into Spaine from the Havana, excellent timber. In the Iland of Cuba, there are infinite numbers of like trees, as Evanos, Caovana, Granadillo, Cedars, and other kindes which I do not know. There are great pine trees in New Spaine, though they be not so strong as those in Spaine; they beare cones but empty apples.[1] The oaks as they call them of Guayaquil, is an excellent wood and sweet, when they cut it; yea, there are canes or most high reedes, of whose boughs or small reedes they doe make bottles and pitchers to carry water, and do likewise vse them in their buildings. There are likewise the "Palos de Mangles", whereof they make masts for their

[1] "Piñas vacias."

Lib. iv.

shippes, and they hold them as strong as yron. *Molle*[1] is a tree of many vertues, which casteth foorth small boughes, whereof the Indians make wine. In Mexico they call it the tree of Peru, for that it came from thence; but it growes also in New Spaine, and better than those in Peru. There are a thousand other trees, which were a superfluous labour to intreate of, whereof some are of an exceeding greatnesse. I will speake only of one which is in Tlacochavaya, three leagues from Gauxa in New Spaine. This tree being measured within, being hollow, was found to have nine fadome, and without, neare to the roote, sixteene, and somewhat higher, twelve. This tree was strooke with lightning from the toppe to the bottome through the heart, the which caused this hollownesse; they say that before the thunder fell vpon it, it was able to shadow a thousand men, and therefore they did assemble there for theyr daunces and superstitions; yet to this day there doth remaine some boughes and verdure, but not much. They know not what kinde of tree it is, but they say it is a kind of cedar. Such as shall finde this strange, let them reade what Plinie reporteth of the plane of Lycia, the hollow whereof contained foure score foote and one, and seemed rather a cabbin or a house than the hollow of a tree, his boughs like a whole wood, the shaddow whereof covered a great part of the field. By that which is writen of this tree, we have no great cause to wonder at the weaver, who hadde his dwelling and loome in the hollow of a chesnut tree; and of another chesnut tree, if it were not the very same, into the hollow whereof there entered eighteene men on horseback, and passed out without disturbing one another. The Indians did commonly vse their idolatries in these trees, so strange and deformed, even as did the antient Gentiles, as some writers of those times doe report.

Plin., lib. xxii, c. 4.

[1] *Schinus Molle*. See my translation of *G. de la Vega*, i, 187; and ii, 364, 367.

Chap. xxxi.—*Of Plants and fruits which have bin carried out of Spaine to the Indies.*

The Indians have received more profit, and have bin better recompensed in plants that have bin broght from Spaine, than in any other marchandise, for that those few which are carried from the Indies into Spaine, growe little there, and multiply not; and contrariwise the great number that have beene caried from Spaine to the Indies, prosper wel and multiplie greatly. I know not whether I shall attribute it to the bounty of the plants that goe from hence, or to the goodnesse of the soile that is there. Finally, there is at the Indies any good thing that Spaine brings foorth; in some places it is better, in some worse, as wheate, barley, hearbes, and all kindes of pulses; also lettuce, cabbage, radishes, onions, garlike, parsley, turnips, parsnips, nightshade,[1] or apples of love, siccorie, beetes, spinage, pease, beanes, vetches; and finally, whatsoever groweth heere of anie profite, so as all that have voyaged thither, have beene curious to carry seedes of all sorts, and all have growen, although diversly, some more, some lesse. As for those trees that have most aboundantly fructified, be orange trees, limons, citrons, and others of that sort. In some partes there are at this day, as it were, whole woods and forests of orange trees; the which seeming strange vnto mee, I asked who had planted the fields with so many orange trees? they made mee answer, that it did come by chaunce, for that oranges being fallen to the ground, and rotten, their seeds did spring, and of those which the water had carried away into diverse partes, these woods grew so thicke, which seemed to me a very good reason. I have saide that this fruite hath generally increased most at the Indies, for that I have not beene in any place but I

[1] Berengenas.

Lib. iv.

finde orange trees, for that all their soyle is hote and moist, which this tree most desires. There growes not any vppon the Sierra or mountains, but they carry them from the vallies or sea coast. The conserve of oranges which they do make at the Ilands is the best I have seene anie where; peaches, nectarines, and apricotes have greatly multiplied, especially in New Spaine. At Peru there growes few of these kindes of fruites, except peaches, and much lesse in the Ilands. There growes apples and peares, but not abundantly; there are but few plumbs, but aboundance of figges, chiefly in Peru. They finde quinces in all the country of the Indies, and in New Spaine, in such aboundance as they gave vs fifty choice ones for halfe a riall. There is great store of pomegranates, but they are all sweete, for the sharp are not there esteemed. There are very good melons in some partes of Peru. Cherries, both wilde and tame, have not prospered well at the Indies, the which I do not impute to want of temperature, for that there is of all sorts, but to carelessnesse, or that they have not well observed the temperature. To conclude, I do not finde that in those partes there wants any dainty fruite. As for grosse fruites, they have no chesnuttes, neither doe I finde that any have growne there to this day. Almonds growe there, but rarely. They carry from Spaine, for such as are dainty mouthed, both almonds, nuttes, and filberts; but I have not knowne they had any medlers, which importes little. In my iudgement, this may suffice to shew that there wanteth no delightfull fruites. Now let vs speake somewhat of plants that profit, and which have been carried from Spaine, and so we will ende this discourse on plants, which is getting long.

CHAP. XXXII.—*Of grapes, vines, olives, mulberries, and canes of sugar.*

I meane by profitable plants, those which, besides that which they eate in the house, bring silver to theyr masters; the chiefe of these is the vine, whereof commeth wine, vineger, grapes, greene and dry, veriuyce, and sirrope; but the wine is the best. There growes no wine nor grapes in the Ilandes, nor in Tierra Firme, but in New Spaine there are some vines which beare grapes, and yet make no wine. The cause is, for that the grape ripens not well, by reason of the raine that falles in the months of Iuly and August, which hinders their ripening, so as they serve onely to eate. They carry wine out of Spaine, and from the Canaries, to all partes of the Indies, except Peru and the realme of Chile, where there are vines that yeelde excellent wine, which increase daily both in quantity, for that it is great riches in that country, and in beauty, for that they are become with time and practise more expert vine growers. The vines of Peru are commonly in hote vallies, where there are water channels, and they irrigate by hand, because there falles no raine at all from heaven in the *Llanos*, and the rains in the *Sierra* are not in the proper season. There are some places where the vines are not watered, neither from heaven nor earth, and yet they increase in great aboundance, as in the valley of Yca, and in the *hoyas* that they call Villacuri, in which places they finde *hoyas* where the earth is suncke downe amongest the sands, which are thorow-out the yeare of a woonderfull coolenesse, and yet it raines not there at any time, neither is there any maner of meanes to water it artificially; the reason is, because the soile is spongy, and suckes vp the water of the rivers that fall from the mountains, which moisten these sands, or else it is the moistnesse of the sea, as others suppose, which passing

Lib. iv.

over this sand, is the cause why it is not barren nor vnprofitable, as the Philosopher teaches. The vines have so increased there, as for this cause onely the tithes of the Churches are multiplied five or sixe times double within these twentie yeares. The most fertile vallies for vines be Vitor neare to Arequipa, Yca in the territory of Lima, and Caracato in the Countrey of Chuquiapu;[1] they carry this wine to Potozi, Cusco, and divers partes, which yeeldes a great revenue; for, notwithstanding all the aboundance they have, an *arroba* is there woorth five or sixe duckats, and if it be Spanish wine (as they commonly carry in their fleetes) it is woorth tenne or twelve. They make wine like to that of Spaine, in the realme of Chile, being in the same climate; but it corrupteth being carried to Peru; they eate the grape where they cannot drink the wine. And it is strange, that in the city of Cusco you shall finde ripe grapes all the yeare long; the reason is (as they say) for that those valleys bring foorth fruits in diverse moneths of the yeare, either for that they cutte their vines in diverse seasons, or that this varietie proceedes from the quality of the soyle; but whatsoever it be, it is most certaine there are some valleys which carry fruit all the yeare. If any one wonder at this, it may be he will wonder much more at that which I shall say, and perchaunce not beleeve it. There are trees in Peru, whereof the one part yeeldes fruit one sixe moneths of the yeare, and the other halfe part yeeldes fruit the other sixe moneths. In Mala, which is thirteene leagues from the Cittie of Kings,[2] there is a figge tree, whereof the one halfe which is towards the south is greene, and yeeldeth his fruite one season of the yeare, that is when it is summer vpon the Sierra, and the other moiety towards the Llanos or sea coast is greene, and yeeldes his fruite in the other contrary season, when it is summer vpon the Llanos, which groweth

[1] La Paz, in Upper Peru (now Bolivia). [2] Lima.

from the diverse temperature, and the ayre which commeth from the one part and the other. The revenue of wine there is not small, but it goeth not out of the country. But the silke that is made in New Spaine is transported into other countries, as to Peru. There were no mulberrie trees in the Indies, but such as were brought from Spaine, and they grow well, especially in the province which they call Misteca, where there are silke-wormes, and they put to worke the silke they gather, whereof they make very good taffetas. Yet, to this day, they have made neyther damaske, sattin, nor velvet. The sugar yet is a greater revenue, for they not only spend it at the Indies, but also they carry much into Spaine, for the canes grow exceeding well in many parts of the Indies. They have built their engins in the Ilands, in Mexico, in Peru, and in other partes, which yeeldeth them a very great revenue.

It was tolde me that the engine for sugar in Nasca was worth yeerely above thirty thousand peeces of revenue. That of Chicama, ioyning to Truxillo, was likewise of great revenue, and those of New Spaine are of no lesse; and it is a strange thing to see what store they consume at the Indies. They brought from the Iland of Santo Domingo, in the fleete wherein I came, eight hundred ninety eight chests of sugar, which being, as I did see, shipped at Puerto Rico; every chest, in my opinion, weighed eight *arrobas*; every *arroba* weighing five and twenty pounds, which are two hundred weight of sugar. Sugar is the chiefe revenue of these Ilands, so much are men given to the desire of sweete things. There are likewise olives and olive trees at the Indies, I say in Mexico and Peru, yet hath there not beene to this day any mill for oile, for that they eate all their olives, and dresse them well: they finde the charge is greater to make oile than the profit, and therefore they carry all the oyle they do spend from Spaine. And heere we will end with plants, and will passe to such beasts as be at the Indies.

Chap. xxxiii.—*Of Beasts bearing wooll, and of Kine.*

Lib. iv.

I finde there are three kindes of beasts at the Indies, whereof some have been carried from Spaine; others are of the same kinde we have in Europe, and yet not carried by the Spaniardes; and others are proper to the Indies, whereof there are none in Spaine. Of the first kinde are sheepe, kine, goates, swine, horses, asses, dogs, cattes, and other such beasts, for there are of all these kindes at the Indies. The smaller cattell have greatly multiplied, and if they could make profite of their woolls by sending them into Europe, it were one of the greatest riches the Indies had, for there the flockes of sheepe have great pastures, whereas their feeding failes not. In Peru there is such store of pastures and feedings, as no man hath any proper to himselfe, but every man feedes his troopes where he pleaseth. For this reason there is commonly great store of flesh, and very good and cheape, and all other things that come from sheepe, as milke and cheese. For a time they lost their woolles, vntill that some beganne to husband it, and to make cloth and coverings, which hath beene a great helpe for the poorer sort of the countrie, for that the cloth of Castille is very deere there. There are many clothiers in Peru, but more in New Spaine, yet the cloth that comes from Spaine is farre better, whether the wooll be more fine or the worke-men more expert. In former times there were men that did possesse threescore and ten, yea, a hundred thousand sheepe, and at this day they have not many lesse. If this were in Europe, it were a very great substance, but in that countrie it is but a meane wealth. In many partes of the Indies, and, I thinke, in the greatest part, small cattell do not increase and profite well, by reason that the grasse is high and the soile so vicious, that they cannot feede so well as great cattell. And therefore there is an infinite number of kine,

whereof there are two kindes. Some are tame and go in troupes, as in the Land of Charcas, and other Provinces of Peru, as also in all New Spaine: from these tame kine they draw such profite as they do in Spaine, that is, the flesh, butter, calves, and oxen, to till the ground. The other kinde is wilde, which live in the mountaines and forrests, and therefore they tame them not, neither have they any master to whom they are proper, both for the roughnes and thickenes of the forrest, as also for the great multitude there is, and he that first killes them is the master, as of any wilde beast. These wilde kine have so multiplied in Santo Domingo and thereabouts, that they troope together in the fields and woods by thousands, having no master to whom they appertaine. They hunt these beasts onely for their hides; they go to the field on horse-backe with their weapons to hough them, coursing the kine: and when they have strucken any and staied them, they are their owne; they flay them and carry the hides home, leaving the flesh, which every one neglects for the aboundance there is, so as some have testified in this Iland, that in some places the aire hath been corrupted with the aboundance of these stinking carcases. The hides they bring into Spaine is one of the best revenues of the Ilands and of New Spaine. In the fleet, the yere 1587, there came from Santo Domingo 35444 hides, and from New Spaine 64350, which they value at 96532 peeces, so as when they discharge one of these fleetes it is admirable to behold the river of Seville, and in the arsenall (where they vnlade) so many hides and so much marchandize. There are also great numbers of goates, whose cheefe profite is their tallowe, besides their kid-milke and other commodities, for that both rich and poore vse this tallowe for lightes; for, as there is a great quantitie, so do they make very good accoumpt of it; yea, more then of oyle, but all the tallow they vse is onely of the males. They vse their skinnes for shooes, yet I hold them not so good as

Lib. iv.

those which are carried from Castille. Horses have multiplied there, and are very excellent in many places; yea, in many partes there are races found as good as the best in Spaine, as well for racing and for pompe as also for travell: and therefore they vse horses most commonly, although there be no want of mules, whereof there are many, especially where they make their carriages by land. There is no great numbers of asses, having no great vse for them, neither for travell nor service. There are some few cammells. I have seene some in Peru that were brought from the Canaries, and have multiplied there a little. In Santo Domingo, dogges have so multiplied in number and bignes, as at this day it is the scourge and affliction of that Iland: for they eate the sheepe, and go in troupes through the fields. Such that kill them are rewarded like to them that kill woolves in Spaine. At the first there were no dogges at the Indies, but some beasts like vnto little dogges, the which the Indians call Alco, and therefore they call all dogges that go from Spaine by the same name, by reason of the resemblance that is betwixt them. The Indians doe so love these little dogges, that they will spare their meate to feede them, so as when they travell in the countrie they carry them with them vpon their shoulders or in their bosomes, and when they are sicke they keepe them with them, without any vse, but onely for company.

Chap. xxxiv.—*Of some Beasts of Europe which the Spaniardes found at the Indies, and how they passed thither.*

It is certaine that they have carried from Spaine all these beasts whereof I have spoken, of which kindes there were none at the Indies when they were first discovered about a hundred yeares since; for besides that it may be wel approved by witnesses at this day living, it is also a suffi-

cient argument to see, that the Indians in their tongue have no proper words to signifie these beasts, but they vse the same Spanish names, although they be corrupted: for, being ignorant of the thing, they tooke the word common to those places from whence they came. I have found this a good rule, to discerne what things the Indians had before the Spaniardes came there, and what they had not: for they gave names to those they had and knew before, and have given new names to these that are newly come vnto them, which commonly are the same Spanish names, although they pronounce them after their maner, as for a horse, wine, and wheate. They found of some sortes of beasts that are also in Europe, and were not carried thither by the Spaniards. These are lions, tigres, beares, boares, foxes, and other fierce and wilde beasts, whereof we have treated in the first booke, so as it was not likely they should passe to the Indies by sea, being impossible to swimme the ocean: and it were a follie to imagine that men had imbarked them with them. It followes therefore that this worlde ioynes with the new in some part: by which these beasts might passe, and so by little and little multiplied this new world. [For, in accordance with the Holy Scripture, all these animals were saved in the ark of Noah, and have thence been spread over the world.][1] The lions which I have seene are not red, neither have they such haire as they vsually paint them with. They are grey, and not so furious as they seeme in pictures. The Indians assemble in troupes to hunt the lion, and make as it were a circle, which they do call *Chacu*,[2] wherewith they inviron them, and after they kil them with stones, staves, and other weapons. These lions vse to climbe trees, where being mounted, the Indians kil them with launces and crossebowes, but more easily with harquebuzes. The tygres are more fierce and cruell, and are more dangerous to meete,

Genes. vi.

[1] Omitted in the old translation.

[2] For an account of the *Chacu*, see *G. de la Vega*, ii, p. 115.

because they breake foorth and assaile men in treason. They are spotted as the Historiographers describe them. I have heard some report that these tygres were very fierce against the Indians, yet would they not adventure at all vppon the Spaniards, or very little; and that they would choose an Indian in the middest of many Spaniardes, and carry him away.

The beares, which in Cusco they call *Otoroncos*,[1] be of the same kinde that ours are, and keepe in the ground. There are few swarmes of bees, for that their honniecombes are found in trees, or vnder the ground, and not in hives as in Castille. The honny combes which I have seene in the Province of Charcas, which they call Lechiguanas, are of a grey colour, having little iuyce, and are more like vnto sweete strawe, than to hony combs. They say the bees are litle, like vnto flies; and that they swarme vnder the earth. The hony is sharp and black, yet in some places there is better, and the combes better fashioned, as in the province of Tucuman in Chille, and in Carthagena. I have not seene nor heard speake of wild boares; but of foxes and other wild beasts that eate their cattell and fowle, there are more than their shepheards would willingly have. Besides these beasts that are furious and hurtfull, there are others that are profitable, and have not beene transported by the Spaniardes, as stagges and diere, whereof there is great aboundance in all the forrests. But the greatest parte is a kinde of diere without hornes; at the least, I have never seene nor heard speake of other, and all are without hornes like vnto *corcos*.[2] It seemes not hard to beleeve, but is almost certaine, that all these beasts for their lightnesse, and being naturally wilde, have passed from one world to

[1] *Uturuncu* is the Quichua for a jaguar. A bear is *Ucumari*. See *G. de la Vega*, ii, pp. 385, 386; where he refers to the mistake of Acosta in applying the word *Otoroncos* (a corruption of *Uturuncu*) to the bear, instead of to the jaguar.

[2] A small deer.

an other, by some parts where they ioyne, seeing that in the great Ilands far from the maine land I have not heard that there are any, though I have made diligent inquiry. Lib. iv.

Chap. xxxv.—*Of Fowles which are heere, and are at the Indies, and how they could passe thither.*

Wee may more easily beleeve the same of birdes, and that there are of the same kindes that we have, as partridges, turtles, pigeons, stockdoves, quailes, and many sorts of falcons, which they send from New Spaine and Peru to the noblemen of Spaine, for they make great accompt of them. There are also herons and eagles of diverse kindes; and there is no doubt but these birds and such like, have sooner passed thither than lions, tygres, and stagges. There are likewise at the Indies great numbers of parrots, especially vpon the Andes of Peru, and in the Ilands of Puerto Rico and Santo Domingo, where they flee by flockes, as pigeons do here. To conclude, birdes with their wings may goe where they will; and truely many kindes might well passe the gulph, seeing it is certaine, as Plinie affirmeth, that there are many that passe the sea, and goe into strange regions, although I have not read that any fowle hath passed by flight so great a gulph as is the Indian Ocean,[1] yet hold I it not altogether impossible, seeing the common opinion of mariners, that you shall finde them two hundred leagues and more from the land. And as Aristotle doth teach, that birdes endure the water easely, having little respiration, as wee see in sea fowle, which dive and remain long vnder the water. Even so we may say that the fowle which bee at this present vppon the maine land, and in the Ilands at the Indies, might passe the sea, resting themselves in some small Ilands or vpon some land which they

Plin., lib. x, c. 23.

Arist., lib. iii, de part animal., cap. 6.

[1] "El Mar Occano de Indias."

Lib. iv.

Plin., lib. x, c. 25.

discovered by a naturall instinct (as Plinie reporteth of some), or peradventure falling into the water when they were weary of flying, and after beganne their flight anew when they had a little rested. As for the fowles which we see in the Ilands where there are no beasts, I beleeve certainly that they passed by one of the foresayde meanes. But for other birdes which we finde vppon the maine land, especially those whose flight is shorte, it is more credible that they came thither as the beasts did, which are of the same kindes that wee have in Europe. For at the Indies there are great birds, very heavy, as ostriches, whereof there are many in Peru, which doe vse sometimes to terrifie the Indian sheepe as they do goe with their burthens.

But leaving these birds that govern themselves without the care of man, except onely for hawking, let vs now speake of tame fowle; I wondered at hennes, seeing there were some at the Indies before the Spaniards came there, the which is well approoved, for they have a proper name of the country, and they call a henne *Hualpa*,[1] and the egge *Ronto*,[2] and they vse the same proverb wee doe, to call a coward a henne. Those that were at the discovery of the Ilands of Soloman do report that they have seene hennes there like vnto ours: wee may conceive that the henne being so tame a fowle and so profitable, men might carry them with them when they passed from one place to another, as we see at this day the Indians in their travel carry their henne with them, or chicken, vpon the burden they have on their shoulders: and likewise they carry them easily in their cages of reedes or wood. Finally, there be at the Indies many kindes of beasts and birds such as we have in Europe, as I have specified, and other sortes which I leave to others to discourse of.

[1] See, on this subject, *G. de la Vega*, ii, pp. 482 to 485.

[2] *Runtu* is the Quichua for an egg.

Chap. xxxvi.—*How it should be possible that at the Indies there should be anie sortes of beasts, whereof the like are no where else.*

It were a matter more difficult to shew and prove, what beginning many and sundry sorts of beasts had, which are found at the Indies, of whose kindes we have none in this continent. For if the Creator hath made them there, wee may not then alleadge nor flie to Noahs Arke, neither was it then necessary to save all sorts of birds and beasts, if others were to be created anew. Moreover, wee could not affirme that the creation of the world was made and finished in sixe days, if there were yet other new kinds to make, and specially perfit beasts, and no lesse excellent than those that are knowen vnto vs. If we say then that all these kindes of creatures were preserved in the Arke by Noah, it followes that those beasts, of whose kindes we finde not any but at the Indies, have passed thither from this continent, as we have saide of other beasts that are knowne vnto vs. This supposed, I demand how it is possible that none of their kinde shoulde remaine heere? and how they are found there, being as it were travellers and strangers. Truly it is a question that hath long held me in suspense. I say for example, if the sheep of Peru, and those which they call Pacos and Huanacus,[1] are not found in any other regions of the worlde, who hath carried them thither? or how came they there? seeing there is no shew nor remainder of them in all this worlde. If they have not passed from some other region, how were they formed and brought foorth there? It may be God hath made a new creation of beasts. That which I speake of these Pacos and Huanacus may be said of a thousand different kindes of birdes and beasts of the forrest, which

[1] Alpacas and Huanacus.

have never beene knowne, neither in shape nor name; and whereof there is no mention made, neither among the Latins nor Greekes, nor any other nations of the world. We must then say, that though all beasts came out of the Arke, yet by a naturall instinct and the providence of heaven, diverse kindes dispersed themselves into diverse regions, where they found themselves so well, as they woulde not parte; or if they departed, they did not preserve themselves, but in processe of time, perished wholy, as we do see it chaunce in many things. For if we shall looke precisely into it, we shall finde that it is not proper and peculiar alone to the Indies, but generall to many other Nations and Provinces of Asia, Europe, and Affrike, where they say there are certaine kindes of creatures that are not found in other regions, at the least if they be any where else, they are knowne to be carried from thence. Seeing then these creatures came out of the Arke, as for example the elephant, which we finde only in the East Indies, and from thence have beene imparted to other regions, wee may say as much of these creatures of Peru, and of others of the Indies, which are not found in any other part of the world.

Wee may likewise consider well vppon this subiect, whether these beasts differ in kind, and essentially, from all others, or if this difference be accidentall, which might growe by diverse accidents, as we see in the linages of men, some are white, others blacke, some giants, others dwarfes; and in apes, some have no taile, others have; and in sheepe, some are bare, others have fleeces; some great and strong with a long necke, as those of Peru; others weake and little, having a short necke, as those of Castille. But to speake directly, whoso would by this Discourse, shewing only these accidentall differences, preserve the propagation of beasts at the Indies, and reduce them to those of Europe, he shal vndertake a charge he will hardly discharge with

his honor. [For if we shall iudge the kindes of beasts by their properties, those of the Indies are so diverse, as it is to call an egge a chesnut, to seeke to reduce them to the knowne kinds of Europe.]

CHAP. XXXVII.—*Of Fowles that are proper to the Indies.*

There are many kindes of notable fowles at the Indies, eyther of the same sort that ours be, or of different. They bring certaine birds from China that have no feete, and all their bodies are almost feathers. They sit not vpon the ground, but hang vpon boughs, by strings or feathers which they have, and so rest themselves like flies or aierie things.[1] In Peru there are birdes which they call Tominejos,[2] so small that often times I have doubted, seeing them flie, whether they were bees or butter-flies; but in truth they are birdes. Contrariwise, those which they call Condores be of an exceeding greatnes, and of such a force, that not onely they will open a sheepe and eate it, but also a whole calfe. Those which they call *Auras*, and others Gallinazos[3] (which in my opinion are of a kinde of ravens) are of a strange fleetness, and have a very quicke sight, being very fit to clense citties, for that they leave no carion nor dead thing. They passe the night on trees or vpon rockes, and in the morning they come to the cities and townes, sitting on the toppes of the highest buildings, where they attend their prey. Their young have white feathers, as they report of ravens, and so change into blacke.

The Guacamayos[4] be birdes bigger then parrots, and resemble them somthing; they are esteemed for the varietie of their feathers, which be very faire and pleasing. In New

[1] This is the old error about birds of Paradise.
[2] Humming birds. [3] Turkey buzzards. [4] Macaws.

Lib. iv. Spaine there are aboundance of birdes with excellent feathers, so as there be not any found in Europe that come neere them, as we may see by the images of feathers they bring from thence, the which are, with great reason, much valued and esteemed, giving cause of admiration, that with the feathers of birdes they should make so excellent a worke, and so perfectly equall, as they seeme properly to be the true coloures of a painter, and have so lively and pleasing a regard, as the Painter cannot exceede it with his pencill and colours. Some Indians which are good and expert workemen in this Art will represent perfectly in feathers, whatsoever they see drawne with the pencill, so as the Painters of Spaine have, in this point, no advantage over them. To Don Felipe, the Prince of Spaine, his schoole-master did give three figures or portraitures made of feathers, as it were, to put in a Breviary. His Highnes did shew them to King Felipe, his father, the which his Maiesty, beholding attentively, said that hee had never seene, in so small a worke, a thing of so great excellency and perfection. One day as they presented to Pope Sixtus V another square bigger then it, wherein was the figure of St. Francis, and that they had told him it was made of feathers by the Indians, he desired to make triall thereof, touching the table with his fingers, to see if it were of feathers, for that it seemed strange to see them so properly fitted, that the eye could not iudge nor discerne whether they were naturall colours of feathers, or artificiall, done with the pencill. It is a goodly thing to see the lustre which a greene, an orange tawny like gold, and other fine colours do cast, and, beholding them another way, they seeme dead colours. They make the best and goodliest figures of feathers in the Province of Mechoacan, in the village of Pascaro. The manner is with small delicate pinsors they pull the feathers from the dead fowles, and with a fine paste they cunningly ioyne them together. They take the small and

delicate feathers of those birds, which in Peru they call Tominejos, or others like vnto them, which have the most perfect colours in their feathers. The Indians (besides these images) did vse feathers in many other most excellent workes, especially for the ornament of Kings and Noblemen, their Temples and Idolls. There are also other great birdes which have excellent and fine feathers, whereof they make plumes of sundry colours, especially when they go to warre, inriching them with gold and silver very artificially, which was a matter of great price. They have the same birdes still, but they are not so curious, neither do they make so many gentill devices as they were wont. There are other birdes at the Indies, contrarie to these of so rich feathers, the which (besides that they are ill favoured) serve to no other vse but for dung, and yet perchance they are of no lesse profite. I have considered this, wondering at the providence of the Creator, who hath so appointed that all creatures should serve man. In some Ilands and headlands, which are ioyning to the coast of Peru, wee see the toppes of the mountaines all white, and to sight you would take it for snow, or for some white land, but they are heapes of dung of sea fowle which go continually thither: and there is so great aboundance, as it riseth many elles, yea, many launces in height, which seemes but a fable. They go with boates to these Ilands onely for the dung, for there is no other profit in them. And this dung is so commodious and profitable as it makes the earth yeelde great aboundance of fruite. They cal this dung Guano, whereof the valley hath taken the name, which they call Lunahuana[1] in the valleys of Peru, where they vse this dung, and it is the most fertile of all that countrie. The quinces, poungranets, and other

[1] Properly *Runahuanac*. Acosta's derivation is wrong. The word is derived from *Runa*, "a man"; and *Huanani*, "to warn". "The warning of men."—See *G. de la Vega*, ii, p. 181. Runahuanac (corruptly Lunahuana) is on the coast of Peru, near Chincha.

Lib. iv.

fruits there, exceede all other in bountie and greatnes; and they say the reason is, for that the water wherewith they water it passeth by a land compassed with this dung, which causeth the beautie of this fruite. So as these birdes have not only the flesh to serve for meate, their singing for recreation, their feathers for ornament and beautie, but also their dung serves to fatten the ground. The which hath bin so appointed by the soveraigne Creator for the service of man, that he might remember to acknowledge and be loyall to him from whom all good proceedes.

Chap. xxxviii.—*Of Beasts for the Chase.*

Besides the Beasts of Chase, whereof we have spoken, which be common to the Indies and Europe, there are others which I doe not remember to have seene here, vnlesse perhappes they have been brought from thence. There are beasts called *Sainos*,[1] made like small hogges, which have this singular to themselves, to have their navill vppon the ridge of their backes: these go by troupes through the woods; they are cruell and nothing fearefull, but, contrariwise, they assail, and have their tusks sharpe as rasors, wherewith they make dangerous wounds and incisions, if such as hunt them put not themselves in safetie. Such as hunt them, for the more safer killing of them, climbe vp into trees, whither the *Sainos* or hogges come presently in troupes, biting the tree when they cannot hurte the man, and then with their launces they kill what they will. They are very good to eate, but they must of necessitie cut off the round peece where the navil growes vpon the backe; for otherwise, within a day they corrupt. There is another kinde of little beast like to sucking pigges, and

[1] Peccaries. The Quichua word is *Sinturu*.

they call them Guadatinajas. I am in doubt whether there were any swine at the Indies before the Spaniardes came thither, like to these in Spaine, for that in the discoverie of the Ilands of Soloman, it is said they found hennes and swine of Spaine. But howsoever it be, it is most certaine that this cattell hath greatly multiplied at the Indies. They eate the flesh fresh, and hold it to be as holesome and as good as if it were of mutton; as in Carthagena, in some partes, they are become wilde and cruell, the which they hunt like wilde boars, as wee see in Santo Domingo and other Ilands where the beasts live in the forrests. In some places they feede them with the graine of mays, and they grow wonderfully fatte, to have the grease, which they vse for want of oyle; in some places they make gamons, as in Toluca of New Spaine, and in Paria of Peru. Returning, then, to such beasts as are peculiar there, even as the Sainos are like vnto swine, though somewhat lesse, even so the Dantas[1] resemble small kine, but more vnto mules, having no hornes. The hides of these beasts are much esteemed for jerkins and other coverings, they are so hard as they resist any blow whatsoever. And as the Dantas be defended by the hardnes of their hides, so those which they call Armadillos are by the multitude of their scales, which open and shut as they please, like to a cuirasse. There be litle beasts which go thorow the woods, called Armadillos, by reason of the defence they have, hiding themselves within their scales, and opening when they list. I have eaten of them, and doe not holde it for a meate of any great woorth; but the flesh of the Yguanas is a better meate, but more horrible to the eye; for they are like to the very lizardes of Spaine, although they be of a doubtfull kinde, for that they go to the water, and comming to land, they climbe the trees vpon the bankes; and as they cast themselves from the trees into the water, the boates watch vnderneath to receive them.

[1] Tapirs.

Lib. iv. The Chinchillas is another kind of small beasts, like squirrels; they have a woonderfull smoothe and soft skinne, which they weare as a healthfull thing to comfort the stomacke, and those partes that have neede of a moderate heate; they make coverings and rugges of the haire of these Chinchillas, which are found on the Sierra of Peru, where there is likewise a small beast very common, which they call Cuyes,[1] and which the Indians hold for a very good meate; and they are accustomed often to offer these Cuyes in their sacrifices. They are like small conies, and have their borows in the ground, and in some places they have vndermined all the land: some are grey, some white, and some speckled. There are other small animalles which they call Uiscachas,[2] and are like to hares, although they be bigger; they hunt them and eate the flesh. Of common hares there are great store in some parts. There are also conies in the realme of Quito, but the good are come from Spaine. There is another strange beast, the which for his great heavinesse and slownesse in mooving they call Perico-ligero,[3] or the little light dogge; hee hath three nailes to every hand, and mooves both hands and feete as it were by compasse, and very heavily: it is in face like to a monkie, and hath a shrill crie; it climbeth trees, and eates ants.

Chap. xxxix.—*Of Micos or Indian Monkies.*

Throughout all the forests, eyther of these Ilands, of the Tierra Firme, or of the Andes, there are infinite numbers of Micos or Monkies, which are a kind of apes, but very different, in that they have a taile; yea, a very long one. And amongest them there are some kinds which are thrise, yea foure times bigger than the ordinary; some are all blacke,

[1] Guinea pigs. [2] *Lagidium Peruvianum.* [3] The sloth.

some bay, some grey, and some spotted. Their agilitie and maner of doing is admirable, for that they seeme to have reason and discourse to go vpon trees, wherein they seeme to imitate birds. Going from Nombre de Dios to Panama I did see in Capira one of these monkies leape from one tree to an other, which was on the other side of a river, making me much to wonder. They leape where they list, winding their tailes about a braunch to shake it; and when they will leape further than they can at once, they vse a pretty devise, tying themselves by the tailes one of another, and by this meanes make as it were a chaine of many; then doe they launch themselves foorth, and the first holpen by the force of the rest takes holde where hee list, and so hangs to a bough, and helps all the rest, till they be gotten vp. It were long to report the fooleries, trickes, traverses, and pleasant sportes they make when they are taught, which seeme not to come from brute beasts, but from a manlike vnderstanding. I sawe one in Cathagena, in the Governours house, so taught as the things he did seemed incredible. They sent him to the taverne for wine, putting the pot in one hand and the money in the other, and they could not possibly gette the money out of his hand before he had his pot full of wine. If any children mette him in the streete and threw any stones at him he would set his pot downe on the one side and cast stones against the children till he had assured his way, then would he returne to carry home his pot. And which is more, although hee were a good bibber of wine (as I have oftentimes seene him drinke when his maister hath given it him) yet would he never touch it vntill leave was given him. They told me, moreover, that if hee sawe any women painted he would fall vppon them, pull off their attire, and would seeke to bite them.

This may be an addition which I have not seene, but I doe not thinke there is any beast in the world approacheth

Lib. iv.

so neare the conversation of a man as this monkey doth. They report so many things, which for feare I shoulde be thought to give credite to fables, or they should be so esteemed, I thinke best to omitte, blessing the Author of all creatures, in that hee would create a kinde of beaste onely for the recreation and delight of man. Some report that they carried these Micos or Monkies to Solomon from the West Indies, but for my parte I holde it was from the East Indies.

Arist., libr. iii, de part ib. animal., c. 2; lib. x, c. 72.

Chap. xl.—*Of Vicuñas and Tarugas of Peru.*

Amongst the most remarkable things at the Indies of Peru be the vicuñas and sheepe of the countrie as they call them, which are tractable beasts and of great profite. The vicuñas are wilde and the sheepe are tame. Some thinke that the vicuñas are those which Aristotle, Plinie, and other Authors call Capreas, which are wilde goates, and in truth they have some resemblance for the lightnes they have in the woodes and mountaines, but yet they are no goates, for the vicuñas have no hornes as those have whereof Aristotle makes mention, neither are they the goates of the East Indies, from whom they draw the bezoar stone; for if they be of that kinde it were a diverse one, as in the race of dogges the mastiff is divers from the grey-hound. The vicuñas of Peru are not those beasts which carrie the bezoar stone in the Province of New Spaine, which there they cal Bezaars, for that they are a kind of stagges or deer; yet do I not know in any part of the world there be any of these beasts, but in Peru and in Chile, which are countries ioyning one to another. These vicuñas are greater than goates, and lesse then calves. Their haire is of the colour of dried roses, somewhat cleerer; they have no hornes like stagges and goates.

They feede vpon the highest tops of the mountains, which they call Punas. The snowe nor frost doth not offend them, but contrariwise they seem to delight in it. They goe in troopes, and runne most lightly; when they meete with any travellers or beasts, they fly away, seeming very fearefull, and in flying they drive their young ones before them. They do not finde that they multiply much; and therefore the Kings Yncas did defend the hunting of vicuñas, if it were not for their feasts, or by their commandement. Some complaine, that since the Spaniards entred there, they have given too much libertie to hunt the vicuñas, and by this meanes they are much diminished. The manner the Indians vse in their hunting, they assemble many men together, to the number of 1000 or 2000; yea, more, and invironing a great circuit of wood, they hunt their game vntil they have compassed it in on all parts, and by this meanes they commonly take three or foure hundred, and so choosing what they list, they let go the rest, especially the females for breede. They are accustomed to sheere these beasts, and of their fleece to make coverings and rugges of great value, for that this wooll is like to white silke, which lastes long; and as the colour is naturall and not died, so is it perpetuall. The stuffes that are made of this wooll are very fresh and good in summer, and they hold them profitable for the inflammation of the reines and other parts, tempering the excessive heate. This wooll hath the like vertue when it is made in quiltes, and therefore some vse it to that end, for the triall they have made thereof. They say, moreover, that this wooll, or coverings made thereof, is phisicall for other indispositions, as for the gowt; yet doe I not know that they have made any certaine triall thereof. The flesh of these vicuñas is not good, although the Indians eate it, and drie it. For the effects of physicke, I will say what I have seene vppon the Sierra of Peru. Comming one night into a Tambo or

Lib. iv. Inne, being much afflicted with paine in mine eies, thinking they would fall out, the which dooth commonly happen in those partes, for that they passe thorow places covered with snow, which is the cause of this accident,[1] being troubled with this paine, and out of patience, there came an Indian woman, which said to me, "Father, lay this to thine eies, and thou shalt be cured". It was a peece of the flesh of vicuñas, newly killed and all bloody. I vsed this medicine, and presently the pain ceased, and soone after went quite away. Besides these *Chacus*, which is the most common manner of hunting at the Indies, they have vsed another more private to take them, which is, that comming neere, they do cast certaine lines with plummets of lead, which entangle their legges, so as they cannot runne, and by this means they take the vicuña. The chiefe reason why this beast is esteemed is, by reason of the bezoars stone they finde in them, whereof we will intreate heereafter. There is another kinde of beasts, which they call tarugas,[2] which likewise are wilde, and more nimble than the vicuñas. They are greater of body, and more hote. They have soft eares and hanging: they goe not in troups as the vicuñas. I have not seene them but alone, and most commonly in high places. They also drawe bezoars stones from these tarugas, which are greater, and have more operation and vertue.

Chap. xli.—*Of Pacos, Huanacos, and Sheep of Peru.*

There is nothing at Peru of greater riches and profit than the cattell of the country, which our men call Indian sheep, and the Indians in their generall language call them Llama. For all things well considered, it is a beast of the

[1] Snow blindness. [2] *Taruca*, a deer. *Cervus antisiensis.*

greatest profite and least charge of any that I knowe: from them they drawe meate and clothing, as from the sheepe of Spain. Moreover, they have the benefite to carry all things they have neede of, vsing them to beare their burthens; and they have no neede eyther of shooes or saddles, nor yet of oates, but he serveth his maister for nought, feeding on the grasse hee findes in the fieldes; so as God hath furnished them of sheepe and donkeys, and all in one beast. And as it is a poore nation, so would hee in this poynt free them from charge, for that there is much pasture vpon the Sierra; and this kinde of cattell hath no neede of any other charge. There are two kindes of these sheepe or Llamas, the one they call Pacos,[1] or sheepe bearing wooll, and the others are bare, and have litle wooll, so are they better for burthen: they are bigger than great sheepe, and lesse than calves, they have a very long necke, like to a camel, whereof they have good neede; for, being high of stature, they have need of a long necke, else should they be deformed. They are of diverse colours, some all white, others all blacke, some grey and some spotted, which they call Moromoro. The Indians had great superstitions in choosing the beasts for sacrifices, of what colour they should be, according to the diversitie of seasons and sacrifices. Their flesh is good, although it be hard, but that of their lambs is the better, and the most delicate that can bee eaten; yet they eate not many, for that the chiefe fruite and profit they yielde is their wooll, to make clothes, and their service to carry burdens. The Indians make stuffs of this wooll wherewith they clothe themselves, the one is grose and common, which they call *auasca*, and the other fine and delicate, which they call *ccompi*, they make carpets and coverings, and other exquisite workes, which last long, and have a very fair lustre, like halfe silke: and that which is most rare, is their maner of weaving

[1] Alpaca.

Lib. iv.

their workes, being both sides alike, so as you shall not find any end in a whole peece. The Ynca King of Peru had many chiefe workmen, to make this worke of *ccompi*; and the which, for the most part, were resident in the Province of Capachica, ioyning to the great lake of Titicaca. They dye this wooll into diverse fine colours, with sundry kindes of hearbes, whereof they make many sortes of workes, both coarse and fine. All the Indians, both men and women, woorke in the Sierra, and have their loomes in their houses, having no neede to buy any stuffes for their necessary vses. Of the flesh of these sheepe they make *charqui*, or dried flesh, the which will last very long, whereof they make great accompt. They are accustomed to drive troupes of these sheepe with burthens, and to go in bandes, three hundred, five hundred, yea, a thousand in a company, with wine, mays, coca, *chuñu*,[1] quicke-silver, and all other kindes of marchandise, and of silver, which is the best of all. They carry barres of silver from Potosi to Arica, which is three score and tenne leagues. I have often wondered to see these troupes of sheepe laden with a thousand or two thousand barres of silver, and much more, which is above three hundred thousand ducats, without any other guard or escort than some Indians, which serve onely to guide these sheepe, and to lade and vnlade them, or at the most, some few Spaniardes; and they sleepe all night in the middest of the fieldes, without other guarde; and yet in so long a way and so weake a guarde, they never finde want or losse of anie thing in so great a treasure of silver, so safe is the way in Peru. The burthen which one of these sheepe dooth commonly carry is of foure or sixe arrobas. When their voyage is long they goe not above two, three, or foure leagues at the most on a day. Those that guide those troupes have their fixed halting places, where they are assured to have water and pasture,

Six arrobas is a hundred and fifty pounds weight.

[1] Frozen Potatoes.

and there they unlade and set vppe their tents, making fire, and dressing their meates, which is not painefull, although it be a fleugmatike and slow manner of travell. When there is but one daye's iourney, one of these sheepe will beare eight arrobas in weight, or more, and beares this burthen eight or tenne leagues in a day, as the poore souldiers were wont to doe when they marched through Peru. This kinde of cattell delights most in a cold aire, and for this cause they live vpon the Sierra, and die in the Llanos, by reason of the heate. Sometimes these sheepe are all covered with ice and frost, and yet they continue sound and well. The bare sheepe are pleasant to behold, for they will stay vpon the way, raising vppe their neckes, and will looke vpon any one very wistly, and so they remaine a long time, without mooving or any show of feare, which giveth occasion of laughter, seeing them thus to stand. And yet sometimes they do growe amazed sodainely, and runne away with their burthens, even to the highest rockes, so as not being able to come vnto them, they are constrained to kil them with an harquebuze, lest they should loose their barres of silver, which they sometimes carry. The Pacos will grow reasty vnder their burdens, lying downe, and will endure to be cutte in a thousand peeces before they wil rise when this humor takes them; whereof the proverb growes in Peru, to say that one is reastie, to signifie he is obstinate; for that when any of these beasts is moodie, it is with excesse. The remedy they have is, to stay and sit downe by the Paco, making much on him, vntil the fit be past, and that he rise: and sometimes they are forced to stay two or three houres. They have a disease like to scabbes, which they call *Carache*,[1] whereof they commonly die. The Antients had a remedy, to bury them quicke that had the *Carache*, lest

[1] See also *G. de la Vega* (ii, p. 378) respecting this disease among the llamas.

Lib. iv.

they shoulde infect the rest, being a very contagious disease, and goes from one to another. An Indian that hath one or two of these sheepe is not reputed poore, for one of them is woorth sixe or seaven peeces of assay, and more, according to the time and place.

Chap. xlii.—*Of the Bezoar stone.*

The Bezoar stone is found in all these beasts before mentioned, which are proper to Peru, whereof some Authors of our time have written whole bookes, which they may reade that desire to have a more particular knowledge. For the present subiect it shall be sufficient to say that this stone which they call Bezoar is found in the stomacke and belly of this beast, sometimes one alone, sometimes two, three, and foure. They are very different in forme, greatnesse, and colour, for that some are small like filberds and lesse, others like walnuts, some like pigeons egges, and others, as bigge as a hens egge; and I have seene some as bigge as an orange. In forme some are round, others in fashion like to lentils and many other formes. For their colour some are black, some white, some grey, dark greene, and others as if they had beene gilded. It is no certaine rule to iudge the best and most fine by the colour or forme. All these stones are made and fashioned of divers films and skins one vpon another. In the province of Xauxa and other provinces of Peru they find these stones in divers kinds of beasts, both wild and tame, as in the Huanacos, Pacos, Vicuñas, and Tarugas, some adde an other kind, which they say are wilde goates, which the Indians call *Cypris*.[1] These other kindes of beastes are very well knowen in Peru, whereof wee have already discoursed. The Huanacos, or country sheepe, or Pacos have commonly the lesser stones

[1] Not a Quichua word.

and blacke, neither are they so much approved for the vse of physicke. They draw the greatest Bezoar stones from the Vicuñas, and they are grey or white, or of a dark greene, which are helde for the better. They esteem those of the Tarugas for the most excellent, whereof there are some reasonable bigge. They are commonly white, inclining to grey, and they have the filmes commonly bigger and thicker than the rest.

They finde the Bezoar stone equally both in male and female. All beasts that ingender it chew the cud, and commonly feede vpon the snow and rockes. The Indians reporte and teach by tradition from their fathers and Antients that in the province of Xauxa, and in other provinces of Peru, there are many herbs and venomous beasts, which poison the water and the pastures where they eate and drinke, and where they breathe; amiddest which venomous hearbes there is one very well knowne of the Vicuña by a naturall instinct, and of other beasts that ingender the Bezoar stone which eate this hearb, and by meanes thereof they preserve themselves from the poisoned waters and pastures; and they say that of this hearb the stone is compounded in the stomacke, whence it drawes all the vertue against poyson and other woonderfull effects. This is the opinion and tradition of the Indians, discovered by men of great experience in the kingdome of Peru, which agrees with reason, and with that which Plinie reports of the mountaine goates, which are nourished and fed vpon poison without suffering any harme. The Indians being demaunded why the sheepe, kine, goates, and calves, such as are in Castille, have not the Bezoar stone, seeing that they feede on the same rockes, their answer is, that they beleeve not that those beasts of Castille eate of that hearb, or that they have found the Bezoar stone in stags and fallow diere. This seemes to agree with our knowledge, for that in New Spaine they find the Bezoar stone, although there be no

Plin., lib. x, c. 72.

Lib. iv. Vicuñas, Pacos, Tarugas, nor Huanacos, but only stags, in some of which they finde these stones.

The principall vertue of the Bezoar stone is against poison and venomous diseases, although there bee heerein divers opinions; some hold it for a mockerie, others for a miracle. Howsoever it be, it is most certaine that it is of a great operation when it is applied in time, and convenient in a maner as hearbes, and to persons capable and disposed; for there is no medicine that doth alwaies cure infallibly. In Spaine and Italie we have seene admirable effects of this stone against the *tabordete*,[1] which is a kinde of plague, but not so much as in Peru. They do apply it beaten and put into some liquor, which may make it fit for the cure of melancholy, the falling sickness, pestilent feavers, and many other diseases. Some take it in wine, others in vinegar, in lemonade, with bullock's tongue, borrage and other ways, as the Phisitians and Apoticaries prescribe. The Bezoar stone hath no proper savour, as Rasis the Arabian doth testifie. Wee have seene notable trialls, and there is no doubt but the Author of this vniversall world hath given great vertues to this stone. The Bezoar stones which come from the East Indies have the first place of account, they are of an olive colour; the second are those of Peru, and the third those of New Spain. Since that these stones were in request, they say the Indians have made artificiall ones; and many when they see these stones greater then the ordinarie, they take them to be false and counterfeit; triall and experience is the best mistres to know them. One thing is worthy admiration, that they grow and are fashioned vpon very strange things, as vpon the tagge of a point, vpon a pinne, or a peece of wood, which they finde in the centre of this stone, and yet do they not hold it false, for that the beast might swallow it, and the stone thicken

[1] Fever.

vpon it, and growes one vpon another, and so it increaseth. I did see in Peru two stones fashioned vpon piñones of Castille, which made vs to wonder much, for that in all Peru we had not seene any pines or piñones of Castille, if they were not brought from Spaine, which seemes to me very extraordinary. This little may suffice touching the Bezoar stone. They bring other phisicall stones from the Indies, as the stone of Hyjada, the bloud stone, the stones of milke, and of the mother.[1] Those which they call Cornerinas, for the heart, whereof there is no neede to speake, having nothing common with the subiect of beastes, whereof we have entreated; which gives vs to vnderstand how the great Master and Author of all hath imparted his benefites and wonderfull secrets to all partes of the world; for the which he is to be glorified for ever. Amen.

[1] "Otras piedras medicinales se traen de Indias, como de hyjada, y de sangre, y de leche, y de madre."

END OF FIRST VOLUME.

T. RICHARDS, 37, GREAT QUEEN STREET, W.C.

RETURN TO the circulation desk of any
University of California Library
or to the
NORTHERN REGIONAL LIBRARY FACILITY
Bldg. 400, Richmond Field Station
University of California
Richmond, CA 94804-4698

ALL BOOKS MAY BE RECALLED AFTER 7 DAYS

- 2-month loans may be renewed by calling (510) 642-6753
- 1-year loans may be recharged by bringing books to NRLF
- Renewals and recharges may be made 4 days prior to due date.

DUE AS STAMPED BELOW

NOV 2 8 2001

DUE
FEB 1 1 2003
SUBJECT TO RECALL

12,000 (11/95)

FORM NO. DD6, 60m, 12/80 UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CA 94720

GENERAL LIBRARY - U.C. BERKELEY

B000277426